Scan by Kittelson LLC

D6.1—1978
D6.1-1983

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

FOR STREETS AND HIGHWAYS

1978

REVISION NO. 2

DECEMBER 1983

U.S. Department of Transportation
Federal Highway Administration

Scan by Kittelson LLC

Approved by the Federal Highway Administrator as the National Standard for all Highways open to public travel in accordance with Title 23, U.S. Code, Sections 109(b), 109(d) and 402(a) and 23 CFR 1204.4

Approved as an American National Standard
by the American National Standards Institute

D6.1–1978 (Supersedes D6.1–1971)

Revisions to this Manual will be published periodically and are available from the Government Printing Office

Scan by Kittelson LLC

TO: Holders of the 1978 Manual on Uniform Traffic Control Devices

SUBJECT: Transmittal of Revision Number 2 of the 1983 Manual on Uniform Traffic Control Devices (MUTCD).

The attached pen and ink changes and page changes to the 1978 MUTCD incorporate the amendments adopted by the Federal Highway Administrator for inclusion therein. The changes were published in the Federal Register, Volume 48, Number 6, January 10, 1983, and became effective February 9, 1983.

This package includes a complete listing of Official MUTCD Rulings on Interpretations, Changes, and Experimentations made since issuance of the 1978 MUTCD. The previous listing of Official Rulings, furnished with Revision Number 1, should be discarded in its entirety. Most rulings are effective on the action date indicated opposite each ruling. However, some of the rulings include a compliance date by which that revision is to be fully implemented.

Any questions or comments concerning this revision or the MUTCD in general should be sent to: Traffic Control Systems Division (HTO-20), Office of Traffic Operations, Federal Highway Administration, Washington, D.C. 20590.

1983 EDITION - TRAFFIC CONTROL DEVICES HANDBOOK: Now available is the 1983 edition of the Traffic Control Devices Handbook (TCDH). The TCDH was developed to serve as an operational guide to supplement the Manual on Uniform Traffic Control Devices. While the TCDH contains recommended practices; engineering analysis and judgment should pervail in operational use. The contents of the TCDH do not constitute Federal Highway Administration policy nor national standards. The TCDH may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The stock number is 050-001-00270-1 and the cost is $20 per copy or $1,500 per 100 copies to a single address.

Scan by Kittelson LLC

Scan by Kittelson LLC

PEN AND INK CHANGES TO MUTCD (REVISION #2)

Page viii. Section 2B-37, change the number located at the end of this line from "10" to "11."

Page X. Section 2D-46, change the number located at the end of this line from "10" to "12."

Page 1A-6. Paragraph 2, line 7 delete the word "booklet." In the same paragraph, line 11, delete the word "Revised" and the date in the next line.

Page 2A-2. Delete Section 2A-3. Refer to Section 1A-3.1 for pertinent information.

Page 2A-12. Where the vertical dimension of the pole is shown, delete the words "nor more than 10."

Page 2B-19. Add "(Reference: Section 2A-31 and 2E-41)" to the last line of the last paragraph in both Sections 2B-26 and 2B-27.

Page 2B-24. Under the TOW-AWAY ZONE word message sign add "R7-201" and directly under that add "12 inches by 6 inches."

Page 2B-25. Line 2 of the last paragraph change the number "21" to "24."

Page 2D-1. Section 2D-4, In the first paragraph, last line, delete "the" and "Booklet." Also at the very bottom of this page beside the asterisk, delete all the words following the word "from" and insert "GPO, see page ii."

Page 2D-2. Section 2D-6, On the last line of the second paragraph after the number 2E-4 add "and Table II-2, page 2F-5)."

Page 2D-3. Section 2D-8. Paragraph 5, line 4, delete the second "the" and "Booklet." Also at the very bottom of this page beside the asterisk, delete all words following the word "from" and insert "GPO, see page ii."

Page 2D-4. The first line of the second paragraph should read as follows: "the basic policy for numbering the U.S. and Interstate Highway Systems is the..."

Page 2D-7. Section 2D-13, In the fourth line change 2D-17 to "2D-16."

Page 2D-8. Section 2D-14, In the fourth line delete the words "black or."

Scan by Kittelson LLC

Page 2D-21. Item number 2, correct the spelling of the word" "where" in the first line.

Page 2D-24. Section 2D-39, In the first line of the fourth paragraph from the top of the page delete the word "advance. " Also add the word "related" to the second line of this same paragraph following the word "intersection." Insert in the margin the official MUTCD ruling number "II-26(C)." The number under the Parking Sign should be "D4-1."

Page 2D-25. Where the PARK & RIDE SIGN (D4-2) is shown, change the size from 36 inches by 48 inches to 30 inches by 36 inches.

Page 2E-26. Section 2E-43, delete "the" in the fourth line and "Booklet" in the fifth line. Also, at the very bottom of this page beside the asterisk, delete all the words following the word "from" and insert "GPO, see page ii."

Page 2F-9. Section 2F-19, third paragraph, second line the word "EXIT" should be "EXIT(S)."

Page 2F-34. Section 2F-33, second paragraph, first line, correct spelling of "services." Same paragraph, seventh line, delete the following phrase "wherever motorist shall be permitted as alternates to word messages."

Page 3B-13. Figure 3-10 title, delete the words "pavement width" and insert the words "lane reduction."

Page 3B-14. Section 3B-11, second paragraph, lines 1 and 3 change the word "should" to "shall." In margin insert "III-18(c)" following lines 1 and 3. Section 3B-11, add the following sentence to the last paragraph: "Pavement marking arrow usage for Wrong-Way traffic is included in Section 2E-41." In margin insert "III-16(c)" following this added sentence.

Page 3B-24. Section 3B-17, middle of page, item number 2 Warning, lines 1 and 2 should read "School XING" and "PED XING," (delete the hypens).

Page 4B-7. Section 4B-8. Add an item number 6 as follows:

"6. For signals located more than 120 feet from the stop sign line. (See Section 4B-12, 10)."

In margin insert "IV-21(c)" after added sentence. Bottom of page, delete ITE address and insert "See page iii."

Scan by Kittelson LLC

Page 4B-12. Figure 4-2. Delete the number "20°" following the word approx., and insert "20°" for each of the two angles shown.

Page 4B-19. Second line, delete the following phrase "if this speed is substantially lower than the speed limits."

Page 4D-2. Section 4D-4, item 3, first line delete the word "lunar." Second line, insert the word "current" between the words "the" and "standard," insert an asterisk following the word "Heads." Third line delete the following: "1975*." In margin insert "Sg-96(c)" opposite Item 3. Bottom of page, delete ITE address and insert "see page iii."

Page 5A-1. Delete Section 5A-2. Refer to Section 1A-3.1 for pertinent information.

Page 6A-2. Next to last paragraph, line 4, insert "pedestrians" between the words "public and" to read "public, pedestrians and." Last paragraph, line 7, delete the word "motorist" and insert the following words "traveling public, pedestrians."

Page 6B-4. Figure 6-2. Delete the sign indicated at start of channelizing devices. Delete arrow from DETOUR to this sign. Add arrow from ROAD CLOSED to Type III barricade.

Page 6B-5. Figure 6-3. Change the location of the Directional Assembly to the near-side of intersection instead of 500 feet in advance of intersection. The distance to the Advance Route Turn Assembly should be 1,000 feet in advance of intersection. The distance from the Advance Detour Sign to the Advance Route Turn Assembly should remain as shown.

Page 6B-22. Figure 6-13a. For signs W5-2a, W9-1, and W8-3a delete "30 inches by 30 inches" and insert "36 inches by 36 inches."

Page 6C-1. Change chapter title to read "C. Barricade and Channelizing Devices."

Page 6C-3. Section 6C-3, last paragraph, line 2, insert the word "white" between "inch" and "bands." Line 4, insert the word "white" between "6" and "band." In margin insert "VI-12(c)" opposite last paragraph.

Page 6D-1. Change the word paving to "Pavement" in the section title.

Page 6F-2. Section 6F-4, second unnumbered paragraph, first line, correct spelling of "paddle."

Page 6F-4. Section 6F-6, first paragraph, line 5, correct spelling of "section."

Page 7A-4. Delete Section 7A-8. Refer to Section 1A-3.1 for pertinent information.

Scan by Kittelson LLC

Page 7B-4. Section 7B-12, second line from bottom of page insert "(Sec. 7D-24)" after word "Beacon."

Page 7D-11. Section 7D-23, third paragraph, first line, delete the word "lunar." Second line, insert the word "current" between the words "the" and "standard," insert an asterisk following the word "Heads." Third line, delete the following: "1975*." In margin insert "Sg.96(c)" opposite third paragraph. Bottom of page, delete ITE address and insert "see page iii."

Page 8B-1. Section 8B-2, second paragraph, last line, delete the word "each" and insert the word "that." Fourth paragraph, delete the words "the" and "Booklet." Footnote should read: "*Available from GPO, see page ii."

Page 8B-6. Section 8B-7, line 5, delete the letter "a" from both sign numbers to read "(R3-1)" and "(R3-2)." Next to last line insert "red and" between "be" and "black."

Page 9A-2. Delete Section 9A-6. Refer to Section 1A-3.1 for pertinent information.

Page 9B-1. Section 9B-2, line 4, delete fraction "½." Phrase should read "minimum of 8 feet."

Index Page 6, "Handicap Crossing Sign" should be "Handicap Parking Sign." Section number should read 2B-31.

Index Page 6, "Handicap Symbol of Access," add Section number 2F-35.

Scan by Kittelson LLC

RECORD OF REVISIONS OR ADDITIONS

REVISION NUMBER	DATE ISSUED	PAGE REVISED OR ADDED
1	12/79	1A-6, 2A-17, 2B-3, 2B-9 2B-19, 2B-24, 2B-26, 2C-8, 2C-9, 2C-13, 2D-18, 2D-20, 2D-21, 2D-22, 2D-24, 2D-26, 2D-27, 2D-28, 2D-29, 2D-30 2F-4, 2E-5, 2E-6, 2E-24, 2F-5, 2F-6, 2F-7, 2F-14, 2F-15, 2F-20, 2F-30, 2F-34, 2F-36, 2F-37, 2F-38, 2F-40, 2F-41, 2F-42, 2F-43, 2F-44, 3B-1, 3B-11, 3B-13, 3B-17, 3B-22, 3B-26, 3D-2, 3D-3, 4B-6, 4B-10, 6B-20, 6B-21, 6B-26, 6B-27 6B-29, 6F-1, 6F-2, 6F-4, 6F-5, 7C-2 7E-2, 8B-3, 9B-1, 9B-4, 9B-9, 9B-10, 9B-13, 9C-4.
REVISION NUMBER	DATE ISSUED	PAGE REVISED OR ADDED
2	12/83	iii, IX, XII, XVII, XIX, XX, 1A-3, 1A-4, 1A-5, 1A-6, 1A-7, 1A-8, 2A-3, 2A-4, 2A-6, 2A-7, 2B-3, 2B-29, 2B-30, 2B-33, 2B-34, 2C-2, 2C-2a, 2C-2b, 2C-3, 2C-4, 2C-9, 2C-10, 2D-6, 2D-30, 2D-31, 2D-32, 2E-22, 2E-23, 2E-24, 2E-25, 2F-26, 2F-38, 2F-41, 3B-6, 3C-1, 3C-2, 3C-3, 3C-4, 4B-13, 6B-1, 6B-29, 6E-4, 6E-5, 6E-6, 8B-3, 8B-4, 8B-5, 8B-6, 8B-7, 9B-13, 9B-14, OR-I-1, OR-II-1, OR-II-2, OR-II-3, OR-II-4, OR-II-5, OR-II-6, OR-II-7, OR-II-8, OR-II-9, OR-II-10, OR-II-11, OR-III-1, OR-III-2, OR-VI-1, OR-IV-2, OR-IV-3, OR-IV-4, OR-IV-5, OR-IV-6, OR-IV-7, OR-IV-8, OR-IV-9, OR-IV-10, OR-VI-1, OR-VI-2, OR-VI-3, OR-VIII-1, OR-VIII-2, OR-IX-1

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

GENERAL PROVISION

Number	Title/Section	Ruling	Action Date
I-1(Chng.)	Legal Authority	Request withdrawn as it involved no substantive change in the MUTCD. The requirement that traffic control devices be placed only under the authority of a public body or official having jurisdiction appeared in Parts II, V, VII, and IX. Although intended that authority for the placement of all traffic control devices be required, no specific reference was included in Parts III, IV, VI and VIII. As an editorial change a consolidated "Placement Authority" Section (1A-3.1) is added in Part I and Sections 2A-3, 5A-2, 7A-8, and 9A-6 are revised to refer to Secion 1A-3.1 for "Placement Authority".	1/10/83

Scan by Kittelson LLC

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

SIGNS

Number	Title/Section	Ruling	Action Date
II-2(Chng.)	Diesel Fuel Sign 2D-46, 2F-33, 2F-34	Approved the addition to the MUTCD which will provide for the display of diesel fuel in general motorist service signing. A new symbol sign was also approved.	4/2/78
II-3(Expr.)	Overload Symbol Sign	Symbol Sign to emphasize restricted loading contained too much detail and had vague message. Evaluation of such a sign would be difficult to assess. The request was not approved.	8/4/78
II-4(Chng.)	Placement of Warning Signs 2C-3	As an aid that should be used with engineering judgement, provides more specific guidance on the placement of warning signs; relating the prevailing speed and conditions to warning sign placement.	2/9/83
II-6(Chng.)	Signing for Restrooms at Rest Areas 2D-42, 2F-35	Standardized rest area sign to inform approaching motorists of the availability of restrooms was approved.	9/28/78
II-8(Chng.)	Ramp Terminal Destination Signs 2D-35	The three destination limit on ramp signing has been modified to permit four destinations on ramp signing when four destinations are included on the main line.	9/26/78
II-9(Chng.)	Turn Sign Usage Criteria	This request to delete references to speed when determining whether to use a curve or turn sign was denied. Requester proposed that the arrow should more closely resemble the roadway alignment rather than to indicate the severity of curve.	9/21/78

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-11(Chng.)	Added Lane Symbol Sign 2C-18, 2C-18.1	A symbol sign was approved that informs motorists on the main roadway as well as those on the ramp that a merging maneuver is not necessary.	7/19/78
II-12(Chng.)	Channel 9 Monitored Sign 2D-46, 2F-37	Standardized the sign used to inform motorists that the citizen band emergency channel is being monitored by an official government agency or its designee.	2/9/83
II-13(Intr.)	Signing for Regional Shopping Centers	Signing for destinations such as regional shopping centers on the Interstate System or other freeways is not in keeping with National MUTCD standard signing principles for such highways.	8/17/78
II-14(Expr.)	Symbolic No Right (Left) Turn on Red	Approval was given to experiment with a sign depicting the Right (Left) Turn prohibition symbol along with the words on RED.	12/18/78
II-15(Expr.)	Special Merge Sign	A warning sign indicating MERGE with a downward sloping arrow on a trapezoid for use in a special case of a left-hand on-ramp merge situation was not approved for experimentation.	8/10/78
II-16(Chng.)	Accessibility to Handicapped Persons for Logo Businesses	A request to establish accessibility to handicapped persons as a criteria for logo signing (motels, restaurants, etc.) was not approved as establishing such criteria for the logo signing program is a State legal matter and the MUTCD requirements cover design of the sign to be used as needed.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-17(Expr.)	Sign Legend for Tourist Information Centers	Experimentation approved to determine if there is a detrimental effect in using the term TOURIST as opposed to TRAVELER in conjunction with information centers.	10/31/78
II-18(Chng.)	Use of Terms Parking, Standing Stopping	A request to add clarifying language on the terms "Parking", "Standing", and "Stopping", each being a progressively more restrictive prohibition, so only one of the three terms need be used on a Parking Prohibition sign was not approved for the following reasons: (1) the MUTCD already permits the use of individual messages on a particular sign; (2) the example in the MUTCD has been modified to illustrate only one of the terms on the sign; and (3) engineers should have the prerogative to use two or three of the terms on a single sign to provide emphasis.	2/9/83
II-19(Chng.)	Spacing of Chevron Alignment Signs	A request to include a suggested spacing for Chevron Alignment Signs was not approved for the following reasons: (1) this sign should be used for added emphasis to denote the sharpness of a road curve and because of its use in special situations, there must be some flexibility in spacing; and (2) field observations have found that the present MUTCD spacing guide is adequate.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-21(Chng.)	Motorcycle and/or Trail Bike Symbol	A request for a uniform motorcycle symbol was not approved for the following reasons: (1) the National Park Service (NPS) has a symbol for motorcycles which is being used nationally; and (2) the NPS symbols are included in the MUTCD by reference.	2/9/83
II-22(Chng.)	Noise Ordinance Sign	A request for adoption of a national standard for a Noise Ordinance sign was not approved for the following reasons: (1) the Noise Ordinance sign is not an appropriate traffic control device; (2) such a sign is a notification of a blanket regulation and as such is permitted where specific ordinances are enforced; and (3) the general nature of the sign does not identify the noise level limit.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-23(Chng.)	Signing for Bypass Lanes	A request for adoption of a national standard for signing bypass lanes was not approved for the following reasons: (1) any paved surface that is improved, designed or ordinarily used for vehicular travel to the right of left turning vehicles may be used by vehicles to bypass the turning vehicles; (2) the extent of bypass lane use across the country does not appear to warrant the establishment of a national standard at this time; (3) several government agencies which have used bypass lanes without special signs have indicated no operational problems; and (4) a bypass lane constructed to relatively high geometric standards would likely cost only slightly less than a design that would provide for a left turn lane.	2/9/83
II-24(Chng.)	Modified Parking Area Sign Sign	A request for adoption of an additional parking sign consisting of white legend and arrow, and a white and green automobile symbol on a brown background was not approved for the following reasons: (1) the color brown is reserved for use to denote recreational and cultural interest guidance; (2) the proposed sign provides no improvement over the existing standard parking sign; and (3) it would be difficult to discern the message with the color combinations proposed.	2/9/83
II-25(Expr.)	Overhead Guide Signs	Experimentation approved to evaluate the effectiveness of nonilluminated opaque background overhead guide sign having reflectorized legend and border. Experimentation completed 4/7/81. Non-Illuminated-Opaque Background Overhead Signs proposed as item II-57 (Chng.)	5/21/79

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-26(Chng.)	Application of Advance Street Name Signs 2D-39	Permits the installation of advance street signs below an intersection related warning sign on intersection approaches, eliminating the need for independent sign supports.	2/9/83
II-27(Chng.)	Prioritized Listing of Basic Sign Groups 2A-4	Provides guidance for establishing the priority of sign placement in areas where the number of signs that may practically be installed is limited.	2/9/83
II-28(Chng.)	911 Emergency Sign	A request to adopt a standard sign to inform the public of the emergency assistance telephone number 911 was not approved for the following reasons: (1) since a motorist seeking aid would have to locate a telephone, the information on emergency assistance could be provided at the telephone; and (2) such signs would detract from essential highway information.	2/9/83
II-29(Chng.)	Application of Winding Road Sign 2C-8	Permits the use of the Winding Road Sign (W1-5) to warn of a series of three or more curves in lieu of installing a series of Reverse Curve or Reverse Turn signs.	2/9/83
II-30(Intr.)	Modification of Letter and Numeral Sizes for Substandard freeways	Letters and numerals used on linear parkway guide signs in either urban or rural areas are those specified in Table II-2. In unique and exceptional circumstances waiver of the letter and numeral size requirements of Table II-2 for specified linear parkways may be granted on a section by section basis.	7/2/81

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-32(Intr.)	Use of School Advance Sign and School Speed Limit Sign at Specific Locations	The S4-3 SCHOOL panel is the proper panel to use with the School Speed Limit sign assembly since the use of the Advance School sign would effect an excessive increase in the height of the assembly. This does not preclude the permissive use of the S4-3 SCHOOL panel and the S1-1 School Advance sign in the same general area.	7/2/81
II-34(Expr.)	High Accident Area Signs	Approval was given to experiment with a series of signs to alert motorists to sections of roadway with a high number of accidents.	5/25/79
II-35(Intr.)	High Visibility Yellow Traffic Posts	High visibility yellow and other colors are acceptable for small signs supports provided these colors are NOT reflectorized. Color coding of small sign supports is not recommended. The predominant color of delineation reflective units is white or yellow. The mixing of these two predominant colors on a delineator assembly might create confusion to the motorist. Therefore, it is inappropriate to mix these two colors on a delineator assembly.	7/2/81
II-36(Chng.)	Advance Rest Area Signs 2E-38, 2F-35	Allows the installation of signs with information on the location of succeeding rest areas.	2/9/83
II-39(Chng.)	Dead End Signs on Intersecting Streets	A request for the development of a standard sign to advise motorists of an intersecting street that dead ends was not approved for the following reasons: (1) existing signs are adequate and can be located such that a motorist on an intersecting street can see these signs before a turn is made into the dead end street; and (2) it would lead to sign proliferation.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-40(Intr.)	Use of Light Blue Auxiliary Panels on Appalachian Highway	The use of the legend APPALACHIAN HIGHWAY in white on a light blue background auxiliary panel to supplement the standard black and white route markers for those highways forming the Appalachian Development Highway system was approved as a unique situation which does not have general application. This is applicable solely to the Appalachian Develpment Highway System. The white on light blue auxiliary panels will not be permitted for use on junction assemblies on crossroad approaches to the Appalachian Development Highways.	7/2/81
II-41(Chng.)	Grooved Pavement Sign	A request to require the use of a GROOVED PAVEMENT advance warning sign was not approved. Use of this sign remains optional.	2/9/83
II-42(Chng.)	Use of the Color Coral for Mass Transit	A request that the color coral be used for the background of mass transit and park-and-ride facility signs was not approved for the following reasons: (1) mass transit and park-and-ride signs do not represent a sufficiently major group of signs to warrant classification as a unique category of signs; (2) there is insufficient justification for use of a special color; and (3) new standard signing for park-and-ride facilities permits the use of the carpool symbol and bus logo, which provide ready recognition.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-43(Chng.)	Anti-Litter Symbol Sign	A request to adopt a national symbol to discourage motorists from littering highways and national parks was not approved for the following reasons: (1) the existing standard signs are sufficient for the needs; and (2) stricter enforcement of State and local statutes would appear to have far greater potential for reducing the litter problem.	2/9/83
II-44(Chng.)	Addition of Language for Handicapped Parking Sign	A request to adopt a supplemental plate with the legend BY TAG, PERMIT ONLY, or equivalent was not approved as there is a wide variety of regulations governing parking for handicapped persons throughout the country and the MUTCD already permits the use of supplemental plates to accomplish the desired result.	2/9/83
II-47(Intr.)	Number of Mandatory Advance Guide Signs	Each major and intermediate interchange is required to have an exit direction sign and from one to four advance guide signs depending on interchange spacing, design, and traffic conditions. This does not include any duplicate signs placed on the left side of the roadway or interchange sequence series signs. Since gore signs are not classified as interchange guide signs, they are not included in minimum or maximum requirements.	7/2/81
II-49(Expr.)	Symbolic Pedestrian Push Button Sign	Approval was given to experiment with a proposed symbolic pedestrian push button sign to determine pedestrian behavior. Experimentation completed 7/21/80, sign proposed as item II-55 (Chng.)	3/24/80

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-51(Chng.)	Additional Warrants for Multiway STOP Signs	A request for a warrant based on a combination of traffic volume and minimum sight distance at an intersection was not approved as the proposal would promote the excessive use of STOP signs, unnecessarily disrupt traffic flow and contribute to the waste of fuel.	2/9/83
II-52(Chng.)	Beginning of Pavement Width Transition Sign	A request to include a standard warning sign to mark the physical beginning point of a pavement width transition was not approved as there appears to be no significant problem in pavement width transition signing and the present signing provided in the MUTCD is adequate.	2/9/83
II-53(Chng.)	Mandatory Movement Sign	A request to provide standard signs for mandatory turning movements at intersections was not approved as they can be adequately signed under the present provisions of the MUTCD.	2/9/83
II-59(Chng.)	Temporary Attention Getting Devices	A request to provide for the optional and temporary use of three devices (a sign, flags, or panel) to draw motorist's attention to newly installed traffic controls was not approved as the MUTCD already provides satisfactory means including the use of flags, for attention-getting.	2/9/83
II-62(Chng.)	Alternate NEXT RIGHT Legend for ½ Mile Advance Guide Signs	A request to permit the legend NEXT RIGHT (NEXT LEFT) on advance guide signs located ½ to ½ mile from an exit at major and intermediate interchanges was not approved. The required mileage action message provides superior guidance and the date for compliance; December 31, 1990, provides more than ample time to revise the sign message through normal, routine maintenance at minimum cost.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
II-64(Chng.)	Symbol Sign for NOAA Weather Information	A request to include a symbol sign to identify rest areas having receivers of National Oceanic and Atmospheric Administration (NOAA) Weather Broadcasts was not approved as the proposed symbol does not communicate the intended message as well as the word legend WEATHER INFO already permitted by the MUTCD.	2/9/83
II-69(Expr.)	Criteria for Gas Logo Signing	Approval was given to experiment with the criteria for the Gas Logo for Specific Service Information Signs.	12/23/81
II-72(Expr.)	Advisory Speed Sign for GSRS (Grade Severity Rating System)	Approval was given to experiment with a sign to advise trucks of various gross weights of the maximum speed(s) on steep downgrades.	5/7/82
II-79(Expr.)	Use of Strong Yellow-Green for Emergency Situations	Approval was given to experiment with strong yellow-green as the background color for emergency signs.	2/18/83

Scan by Kittelson LLC

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

MARKINGS

Number	Title/Section	Ruling	Action Date
III-1(Expr.)	Use of Single Solid Yellow Centerline in Urban Areas to Restrict But Not Prohibit Crossing	Approval was given to experiment with the use of a single solid yellow centerline in urban areas to restrict but not prohibit crossing. Experimentation completed and terminated 2/14/80.	8/10/73
III-6(Chng.)	Edgeline Requirements for Rural Highways 3B-6	Requires the use of edgelines on all rural multilane divided highways. A compliance date of January 1, 1981, was established.	12/21/78
III-7(Chng.)	Object Markers 3C-1, 3C-2	A Type 3 object marker is a warning device and should conform to the standard color of black and yellow. A 5-year period for compliance is provided.	2/9/83
III-8(Chng.)	Simplified Pavement Marking Alphabet	A request to approve a simplified pavement marking alphabet was terminated as the requestor did not furnish requested data.	3/20/80
III-11(Intr.)	Dotted Line Extension at Entrance Ramps	The use of dotted lines through entrance ramps is not inconsistent with the MUTCD. A dotted extension of the right edgeline at entrance ramps is considered an acceptable practice.	7/12/81
III-14(Chng.)	Marking Bypass Lanes	A request to adopt standard marking patterns for bypass lanes was not approved for the following reasons: (1) the use of bypass lanes nationwide is not considered extensive enough to warrant a national standard; (2) bypass lanes have been used without special markings and without indicated operational problems; and (3) a bypass lane constructed to relatively high geometric standards would likely cost only slightly less than a design that would provide for a left turn lane.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
III-15(Expr.)	No Passing Zone Advance Treatment	Approval was given to experiment with no-passing zone advance treatments.	5/21/79
III-16(Chng.)	Permissive Use of Wrong-Way Pavement Marking Arrows 2E-41, 3B-11	The requirement for the use of the Wrong-Way pavement marking arrow is changed to an advisory use.	2/9/83
III-17(Chng.)	Standard Markings for Angle Parking Spaces	A request that standard marking patterns for angle parking be included in the MUTCD was not approved.	2/9/83
III-18(Chng.)	Mandatory Marking of Interchange Ramps	Requires the use of channelizing lines and extension of the dashed lines for parallel decleration lanes at exit ramps.	2/9/83
III-19(Chng.)	Delineator Post Design	Approval was given to experiment with delineator posts utilizng a variety of delineation configurations	12/20/79
III-20(Chng.)	Pavement Markings for a Standard System of Highway Speed Control	A request to use various pavement marking pattern to indicate speed limits was not approved as being too complicated to implement and too confusing to drivers.	2/9/83
III-22(Chng.)	Pavement Markings for School Crossing	A request to adopt a proposed symbol as a standard for crossing pavement marking was not approved as it might be confused with other standard symbols and would neither reduce the time or material required for installation nor provide for long wear.	2/9/83
III-25(Chng.)	Marking of Pedestrian Curb Ramps	A request to adopt national standards regarding color and marking patterns for pedestrian curb ramps was not approved as they are not a traffic control device.	2/9/83

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

SIGNALS

Number	Title/Section	Ruling	Action Date
*Sg-96(Chng.)	Pedestrian WALK color 4D-4, 7D-23	Deletion of the word "lunar" allowing the colors lunar white, clear white, or white to be used for the pedestrian WALK indication was approved.	2/9/83
*Sg-101(Chng.)	Pedestrian YIELD Sign on Signal	Request to change the MUTCD to introduce a yield sign or signal for pedestrians. This request was not approved for the following reasons: (1) no need for such a device has been identified from previous research; (2) no specific detailed device had been presented for consideration. (3) any such device would require changing existing laws in many States.	6/9/78
*Sg-102(Intr.)	Pedestrian Actuated Control 4C-12(2)	The intent of Section 4C-12(2) is that adequate pedestrian crossing time is needed during the green interval only when the pedestrian movement occurs. Since adequate crossing time is being provided (as a result of a push button activation to extend the green interval) the MUTCD requirements are being met.	5/18/78

* These requests were processed prior to issuance of the 1978 MUTCD and carry request numbers from 1971 Edition of the MUTCD.

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
*Sg-103(Intr.)	Marked Crosswalks 4D-4(5), 4D-5 4D-6	Request for clarification as to whether marked crosswalks are required whenever pedestrian signals are used. The sections in question refer to either marked or unmarked crosswalks and were not intended in themselves to be a mandate for marked crosswalks where pedestrian signals and detectors are used. Crosswalks are governed by Section 3B-15 which states that "crosswalks should be marked at all intersections where there is substantial conflict between vehicle and pedestrian movements."	7/27/78
*Sg-104(Chng.)	Pedestrian Indications at Tee-Intersections	A request to change from "shall" to "should" the requirement for a specific indication for pedestrians crossing from the top of the Tee toward the stem, was not approved as the request was not considered proper or reasonable in the safe control of traffic at signalized intersections.	2/9/83
*Sg-107(Intr.)	Arrow Left Turn Signals	Request on clarification of how an arrow signal face for left turns should be handled under flashing operation. FHWA response noted that the Manual: (1) precludes the darkening of a left-turn signal indications; (2) requires they be flashed CIRCULAR RED or CIRCULAR YELLOW; (3) does not provide for flashing arrow indications. Given these requirements such arrow signal faces must additionally provide for either a flashing CIRCULAR RED or flashing CIRCULAR YELLOW indication and could be handled by (1) a fourth indication (either CIRCULAR RED or CIRCULAR YELLOW); (2) effective substitution of the CIRCULAR RED and CIRCULAR YELLOW indications for the respective arrow indications.	5/24/78

* e requests were processed prior to issuance of the 1978 M[illegible] D and carry request numbers from 19[illegible] Edition of the MUTCD.

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-5/Sg-100 (Chng.)	Use of Steady Flashing Downward Yellow Arrows 4E-8, 4E-9, 4E-10, 4E-12	Request to change the MUTCD to allow the use of steady and flashing downward YELLOW ARROW lane control signals on freeways to indicate that traffic conditions are congested but closure of the lane is not warranted. The request was denied but with the recommendation that it be resubmitted as a request for experimentation.	5/25/78
IV-5/Sg-100 (Expr.)	Use of Steady & Flashing Downward Yellow Arrows	The above request resubmitted as a request for experimentation and approved.	7/11/79
IV-7/Sg-11 (Intr.)	Conflict Between Steady Red Traffic Signal Indications and Flashing Red Railroad Signals	Request as to whether there is a conflict between steady red traffic signal indications and flashing red railroad signals when the intersection and the railroad crossing are in close proximity. There is no conflict in the MUTCD.	7/2/81

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-9/Sg-80 (Chng.)	Flashing Red Signals Facing the Median Crossover	A request to allow concurrent display of flashing and steady signal indications with a two-phase traffic signal at a wide median was not approved for the following reasons: (1) where a median is greater than 30 feet in width each roadway is considered a separate intersection for signalization purposes; and (2) degradation of the meaning of a CIRCULAR GREEN Signal indication.	2/9/83
IV-10/Sg-112 (Chng.)	Prohibit Straight Ahead Green Arrow	A request to prohibit the use of the straight ahead GREEN ARROW was not approved for the following reasons: (1) the straight ahead GREEN ARROW serves a purpose to many complex intersections; (2) the MUTCD does not allow indiscriminate use; (3) prohibiting its use would unnecessarily limit flexibility of control devices.	2/9/83
IV-11/Sg-113 (Chng.)	Left Turn Lane Signal Displays for Permissive Left Turn	A request to preclude display of the circular green signal to control an exclusive turn lane during intervals when a circular green signal is displayed to oncoming traffic from the opposite direction was not approved as traffic capacity would be unnecessarily reduced.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-13(Chng.)	Dual Circular Indication Traffic Signals on Limited Use Roadways	A request to allow the use of a variable indication signal to display alternately a CIRCULAR GREEN and a CIRCULAR YELLOW indication on limited use roadways was not approved as it would degradate present standards which provide for uniform displays of signal indications to obtain positive response from all drivers.	2/9/83
IV-16(Intr.)	Signal Display for Exclusive Phase of Turn Signal	Request for an interpretation as to whether the simultaneous display of a CIRCULAR GREEN and a left-turn GREEN ARROW in the same signal head over an exclusive left turn lane is permissible at locations where permissive/protected left-turn phasing is used. The MUTCD allows permissive/protected left/turn phasing to display a CIRCULAR GREEN with a left-turn GREEN ARROW in the signal face that controls left-turn traffic. regardless of the lateral position of the signal faces.	7/2/81
IV-17(Chng.)	Flashing Signal Display for Fire Preemption	A request to establish a uniform standard for priority control of traffic control signals for fire emergency vehicles was not approved for the following reasons: 1) the MUTCD provides for priority control of traffic signals without unnecessarily limiting the application of controls; 2) sufficient latitude to incorporate local concepts of priority control are presently allowed; 3) adoption of a uniform standard would unnecessarily limit flexibility of priority traffic control device uses.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-18(Chng.)	No Turn on Walk	A request to adopt a "No Turn on Walk" sign at signalized intersections where it is desired to prohibit right turn on red during a signal phase when pedestrians have completed use of the intersection was not approved as it was a duplication of the standard which requires vehicles to yield to pedestrians in a crosswalk.	2/9/83
IV-19/Sg-68b (Expr.)	Use of Strobe Lights at Railroad Crossings	A request to experiment with strobe-lights attached to cantilevered railroad crossing signals to improve conspicuity and reduce accidents at problem crossings was approved.	7/10/78
IV-21(Chng.)	Required Locations of Traffic Signals 4B-8, 4B-13	A request permitting the alternative deployment of signals at at intersections by providing for the use of 12-inch lenses in in all signal installations between 120 and 150 feet beyond the stop line in lieu of an additional near-side signal was approved.	2/9/83
IV-22(Chng.)	Single Portable Traffic Light	A request to provide for use of a single face on a portable mounting for control of traffic through construction and maintenance zones was not approved as the need for two signal faces for each approach to a portable signal in construction and maintenance zones is as critical, if not more so, than it is at regular traffic signals.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-24(Expr.)	Signalization of an Isolated Industrial Driveway	A request to experiment with a traffic signal installation at an industrial driveway with high peak volumes intersecting a major traffic artery was approved.	9/4/80
IV-26(Expr.)	Evaluation of the Flashing Red Signal Ahead Sign and Flashing Red Strobe Signal	An experimental request to evaluate the effectiveness of the advance warning flashing "RED SIGNAL AHEAD" sign as well as a minor evaluation of the Red Strobe Signal was approved.	11/25/80

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-30(Intr.)	Signal Operation Must Relate to Traffic Flow 4B-20	The word "shall" in Section 4B-20 is a mandatory requirement. The term "traffic requirements" relates to such factors as vehicular volumes, speeds, pedestrian volumes, etc. The Engineering data which should be updated and evaluated is the data needed to develop the new phasing and timing plan. The term "regularly" means a frequency based on engineering judgement, with which traffic characteristics change to the extent that new phasing and timing plans need to be considered.	5/5/81
IV-31(Chng.)	Periodic Darkening of Hazard Identification Beacons	A request to modify Section 4B-19 to clarify guidelines for periodic darkening of Hazard Identification Beacons was was not approved as the present intent of this section is to preclude darkening of only traffic control signals.	2/9/83
IV-32(Chng.)	Flashing Operation of Newly Installed Traffic Signals	A request to provide for the flashing of a new traffic control signal during a period prior to stop and go operation was not approved as not an appropriate MUTCD requirement but considered good practice.	2/9/83
IV-33(Chng.)	Lane-Use Control Signals	Request withdrawn as it is an editorial change which cross-references two requirements of the MUTCD concerning the use of markings and overhead signals on reversible lanes (Sec. 3B-12, 4E-8).	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-35(Intr.)	Pedestrian Clearance Interval Calculation	Request pertained to Section 4D-7 and whether or not the vehicle clearance interval following flashing DONT WALK can be considered as part of the pedestrian clearance interval, even though the DONT WALK is not flashing. The calculation of the amount of clearance interval (flashing DONT WALK) provided for pedestrians can consider the vehicle clearance interval as part of the time provided for pedestrian clearance even though the steady DONT WALK is displayed during the vehicle clearance interval. Discretion should be used in utilizing the latitude afforded by Section 4D-7.	7/23/81
IV-37(Expr.)	Flashing Yellow Permisive Turn Indication	A request to evaluate the use of protected/permitted (flashing YELLOW) left-turn phasing was approved. This experimentation substitutes a CIRCULAR GREEN with a flashing YELLOW display during the permitted portion of a left-turn phase in an exclusive left-turn signal.	6/21/82
IV-37a(Expr.)	Flashing Yellow Turn Indication	This request is a similar experimentation as IV-37 and was approved.	2/8/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
IV-41(Intr.)	Traffic Signal Display at Tee-Intersections	A request on the question of what is considered an appropriate display to meet the requirement of Section 4B-12(1) for an intersection approach which has a very predominate left-turn movement. The requirement for a minimum of two signal faces for the through traffic movement applies to whatever traffic movement is determined to be predominant. Thus, signal head displays should be selected to accommodate this predominate movement since the term "through movement" is not necessarily synonymous with "Straight Ahead" but could be interpreted to indicate there could be other types of through traffic, such as through turning left or right.	12/31/81
IV-46 (Intr.)	Simultaneous Display of Circular Red and Green Arrow	For protected/permitted left-turn phasing the simultaneous display of a CIRCULAR RED and GREEN ARROW on the same signal face is not only considered proper, but it is required that the signals in the left-turn lane display have a CIRCULAR RED indication when a CIRCULAR RED indication is displayed in the other two signal faces. This is required regardless of whether a GREEN ARROW, YELLOW ARROW, or no arrow is displayed on the signal confusion from such displays can be minimized by selecting display and installation arrangements that emphasize the shared function of such signals.	3/30/83

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

CONSTRUCTION AND MAINTENANCE

Number	Title/Section	Ruling	Action Date
VI-2(Chng.)	Minimum Reflectivity Requirements	A request to specify Type III Sheeting as the minimum standard for the level of reflectivity of traffic control devices in work zones was not approved as the type of sheeting now commonly used (Type II) is satisfactory, less expensive, and there have been no reflectivity problems identified with its use.	2/9/83
VI-4(Chng.)	Shoulder Drop-Off Sign 6B-33	A symbol sign depicting a shoulder drop off was approved as an alternate to the word message sign (W8-9) LOW SHOULDER.	7/19/78
VI-5(Expr.)	Experimentation with Work Zone Traffic Control Devices	Approval was given to determine the effectiveness of selected barricades and channelizing devices and which elicits the most favorable driver response.	9/20/78
VI-6(Chng.)	Detour Design Criteria	A request to include design criteria for detours was not approved as appropriate for the MUTCD. Guidelines have been incorporated into the Traffic Control Devices Handbook.	2/9/83
VI-7(Chng.)	Maintained Visibility Level for Channelizing Devices	A request to require specific reflectorization or illumination of traffic control devices in work zones was not approved as being too subjective, difficult to measure and enforce.	2/9/83
VI-8(Chng.)	Orange Stop Ahead and Yield Ahead Symbol Signs	A request that these symbol signs, when installed in construction and maintenance areas, not have an orange background because of the poor contrast with red symbols, was not approved. Identifying the work area with the orange background is significantly important and the use of word legends is still acceptable.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
VI-9(Chng.)	Prohibit Use of Metal Drums	A request that the use of metal drums be prohibited was not approved for the following reasons: (1) metal drums are used extensively without noted problems; (2) prohibition of the use of metal drums is a local option since the MUTCD does not mandate their use; and (3) there are many other devices available for use in lieu of metal drums.	2/9/83
VI-10(Chng.)	Use of Yellow Background Signs in Work Zones	A request to require work zone warning signs to have a yellow background was not approved for the following reasons: (1) when the color orange was adopted, it was recognized that the color contrast would not be as good; however the benefit to the motorist in being able to associate the color orange with work zones outweighed the poorer color contrast; and (2) where the black on orange color contrast is considered to be a problem, a more highly reflective material may be used.	2/9/83
VI-11(Chng.)	Reflectorization of Signs 2A-18, 6B-2	A request requiring that reflectorizing material, other than buttons or similar units, to have a smooth sealed outer surface was approved. A 5-year period for compliance is provided.	2/9/83
VI-12(Chng.)	Color of Reflectorized Material for Cones 6C-3	A change specifying white bands as the color of reflectorized material for cones and tubular markers, was approved. A 3-year period for compliance is provided.	2/9/83
VI-13(Chng.)	Advance Warning Flashing Arrow Panels 6E-7, 6E-8, 6E-9	Definition of the proper use of arrow panels and criteria for their use was approved.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
VI-15(Chng.)	Use of Street Name Signs With Detour Signs 6B-38	Recommended use of Street Name signs with Detour signs was approved.	2/9/83
VI-16(Chng.)	Use of DETOUR ENDS Signs 6B-38	Recommended use of a DETOUR ENDS sign to provide improved guidance to motorists along detours was approved.	2/9/83
VI-19(Intr.)	Use of 30-Gallon Drums	The height requirement of "approximately" 36 inches for drums set on end and used for traffic warning or channelizing in construction and maintenance work areas does not permit the use of 30-gallon drums as traffic control devices.	7/2/81

Scan by Kittelson LLC

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations,

Changes and Experimentations

RAILROAD-HIGHWAY GRADE CROSSINGS

Number	Title/Section	Ruling	Action Date
VIII-1(Chng.)	Lateral Clearance for Flashing Light Signals and Gates	A request to establish greater lateral clearance for railroad crossing signal supports was not approved as it would: (1) require an increase in length of gate arms; (2) increase the need for cantilever gate arms or the potential for train/vehicle collisions; and (3) require increased maintenance effort for alignment of flashing light signals.	2/9/83
VIII-2(Chng.)	Warning Signs on Roads Parallel to Railroads 8B-3	The addition of standard signs for warning motorists on roads parallel to railroads was approved. A 5-year compliance period is provided.	2/9/83
VIII-4(Chng.)	Railroad Advance Warning Sign Depicting Angle of Crossing	A request to adopt a railroad advance warning sign depicting the angle of crossing was terminated as the requester did not furnish requested data.	5/29/83
VIII-5(Chng.)	Use of STOP signs at Railroad-Highway Grade Crossings 2B-5, 8B-9	A change providing for the use of STOP signs at railroad-highway grade crossings, only where the need for the signs has been determined by a detailed traffic engineering study was approved.	2/9/83
VIII-6(Chng.)	Details on Railroad Bells	A request to include specifications for the use of bells at railroad-highway grade crossings was not approved as it is not appropriate for inclusion in the MUTCD.	2/9/83
VIII-7(Chng.)	Required Use of Crossbucks on Bikeways	A request to require at least one crossbuck sign on each bikeway approach to a grade crossing was not approved as such installation should be determined by engineering judgement and not required.	2/9/83

Scan by Kittelson LLC

Number	Title/Section	Ruling	Action Date
VIII-9(Chng.)	Elevation of Top of Foundation for Flashing Lights and Gates	A request to delete the requirement that the top of the foundation for flashing light signal and gate supports be at the same elevation as the crown of the roadway was not approved as the benefits achieved from standardizing support post lengths outweigh the potential benefits of eliminating the elevation requirement.	2/9/83

Scan by Kittelson LLC

Listing of Official MUTCD Rulings on Interpretations, Changes and Experimentations

BICYCLE FACILITLES

Number	Title/Section	Ruling	Action Date
IX-1(Chng.)	Symbol Sign for Interstate Bike Routes 9B-21	A route marker was approved for use on bicycle routes that extend for long distances in two or more States.	7/26/78
IX-2(Chng.)	Bike Parking Sign 9B-23	A standard sign to designate bicycle parking areas was approved.	2/9/83
IX-3(Chng.)	Hostel Sign	A symbol sign closely resembling the Camping/Picnicking sign to provide guidance to hostels was not approved for use as a national standard. Sign was reconsidered and not approved for the following reasons: (1) there is little demonstrated need for such signing; (2) other means are available to get such information to bicyclists and other non-motorists; and (3) similarity with the picnicking sign could create confusion.	9/12/78 2/9/83

Scan by Kittelson LLC

Scan by Kittelson LLC

Scan by Kittelson LLC

NATIONAL ADVISORY COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES

ORGANIZATIONS REPRESENTED

American Association of State Highway and Transportation Officials
444 North Capitol Street, N.W., Suite 225
Washington, D.C. 20001

Institute of Transportation Engineers
525 School Street. S.W.,
Washington, D.C. 20024

National Committee on Uniform Traffic Laws and Ordinances
P.O. Box 1409
Evanston, Illinois 60204

National Association of Counties
440 First Street. N.W.,
Washington, D.C. 20001

National League of Cities
1301 Pennsylvania Avenue, N.W.,
Washington, D.C. 20004

National Association of Governor's Highway Safety Representatives
444 North Capitol Street
Washington, D.C. 20001

International Association of Chiefs of Police, Inc.
11 Firstfield Road
Gaithersburg, Maryland 20878

National Electrical Manufacturers Association
2101 L. Street N.W.,
Washington, D.C. 20037

American Road and Transportation Builder's Association
525 School Street, S.W.,
Washington, D.C. 20024

International Bridge, Tunnel & Turnpike Association, Inc.
2120 L. Street N.W.,
Washington, D.C. 20037

Scan by Kittelson LLC

Scan by Kittelson LLC

		Page
2C-11.	Cross Road Sign (W2-1)	2C-6
2C-12.	Side Road Sign (W2-2, W2-3)	2C-6
2C-13.	T Symbol Sign (W2-4)	2C-7
2C-14.	Y Symbol Sign (W2-5)	2C-7
2C-15.	Stop Ahead Sign (W3-1)	2C-8
2C-16.	Yield Ahead Sign (W3-2)	2C-9
2C-17.	Signal Ahead Sign (W3-3)	2C-9
2C-18.	Merge Sign (W4-1)	2C-9
2C-18.1	Added Lane Sign (W4-3)	2C-9
2C-19.	Lane Reduction Transition Signs (W4-2) (W9-1) (W9-2)	2C-10
2C-20.	Road Narrows Sign (W5-1)	2C-10
2C-21.	Narrow Bridge Sign (W5-2)	2C-11
2C-22.	One Lane Bridge Sign (W5-3)	2C-11
2C-23.	Divided Highway (Road) Sign (W6-1)	2C-12
2C-24.	Divided Highway (Road) Ends Sign (W6-2)	2C-12
2C-25.	Two-Way Traffic Sign (W6-3)	2C-12
2C-26.	Hill Sign (W7-1 to 4)	2C-13
2C-27.	Bump and Dip Signs (W8-1, W8-2)	2C-14
2C-28.	Pavement Ends Sign (W8-3)	2C-15
2C-29.	Soft Shoulder Sign (W8-4)	2C-16
2C-30.	Slippery When Wet Sign (W8-5)	2C-16
2C-31.	Advance Crossing Signs (W11 Series)	2C-16
2C-32.	Crossing Signs (W11A Series)	2C-17
2C-33.	Double Arrow Sign (W12-1)	2C-17
2C-34.	Low Clearance Sign (W12-2)	2C-18
2C-35.	Advisory Speed Plate (W13-1)	2C-18
2C-36.	Advisory Exit Speed Signs (W13-2, W13-3)	2C-19
2C-37.	Dead End Signs (W14-1, W14-2)	2C-20
2C-38.	No Passing Zone Sign (W14-3)	2C-20
2C-39.	Limited Sight Distance Sign (W14-4)	2C-21
2C-40.	Playground Sign (W15-1)	2C-21
2C-41.	Other Warning Signs	2C-22

D. Guide Signs—Conventional Roads

Section 2D-	1.	Scope of Conventional Road Guide Sign Standards	2D-1
2D-	2.	Application	2D-1
2D-	3.	Color, Reflectorization, and Illumination	2D-1
2D-	4.	Size of Signs	2D-1
2D-	5.	Lettering Style	2D-1
2D-	6.	Size of Lettering	2D-2
2D-	7.	Amount of Legend	2D-2
2D-	8.	Arrows and Symbols	2D-3
2D-	9.	Numbered Highway Systems	2D-3
2D-10.		Route Markers and Auxiliary Markers	2D-4
2D-11.		Design of Route Markers (M1-1 to 7)	2D-5
2D-12.		Design of Route Marker Auxiliaries	2D-7
2D-13.		Junction Marker (M2-1)	2D-7
2D-14.		Combination Junction Sign (M2-2)	2D-8
2D-15.		Cardinal Direction Marker (M3-1 to M3-4)	2D-8
2D-16.		Markers for Alternative Routes	2D-8
2D-17.		Alternate Marker (M4-1, M4-1a)	2D-9
2D-18.		Bypass Marker (M4-2)	2D-9
2D-19.		Business Route Marker (M4-3)	2D-10

Scan by Kittelson LLC

Page

2D-20. Truck Route Marker (M4-4) 2D-10
2D-21. To Marker (M4-5) 2D-10
2D-22. End Marker (M4-6) 2D-10
2D-23. Temporary Marker (M4-7) 2D-11
2D-24. Detour Marker (M4-8) 2D-11
2D-25. Detour Sign (M4-9R and 9L) 2D-11
2D-26. Advance Turn Arrow (M5-1, M5-2) 2D-12
2D-27. Directional Arrow (M6-1 to M6-7) 2D-12
2D-28. Route Marker Assemblies 2D-12
2D-29. Junction Assembly 2D-14
2D-30. Advance Route Turn Assembly 2D-14
2D-31. Directional Assembly 2D-14
2D-32. Confirming or Reassurance Assemblies 2D-19
2D-33. Trailblazers 2D-19
2D-34. Destination Signs and Distance Signs 2D-19
2D-35. Destination Signs (D1-1 to 3) 2D-20
2D-36. Location of Destination Signs 2D-22
2D-37. Distance Sign (D2-1 to 3) 2D-22
2D-38. Location of Distance Signs 2D-22
2D-39. Street Name Sign (D3) 2D-23
2D-40. Parking Area Sign (D4-1) 2D-24
2D-41. Park and Ride Signs (D4-2) 2D-24
2D-42. Rest Area Signs (D5-1 to 5) 2D-25
2D-43. Scenic Area Signs (D6-1 to 3) 2D-26
2D-44. Recreational and Cultural Interest Area Signs (D7-1, 2) 2D-27
2D-45. Weigh Station Signing (D8-1 to 3) 2D-27
2D-46. General Service Signs (D9-1 to 10) 2D-28
2D-47. Mileposts (D10-1 to 3) 2D-31
2D-48. Traffic Signal Speed Sign (I1-1) 2D-32
2D-49. General Information Signs (I Series) 2D-32
2D-50. Signing of Named Highways 2D-34
2D-51. Trail Markers 2D-34

E. Guide Signs—Expressway

Section 2E- 1. Scope of Expressway Guide Sign Standards 2E-1
2E- 2. Application 2E-1
2E- 3. General Standards 2E-1
2E- 4. Functions of Expressway Guide Signs 2E-2
2E- 5. Color of Expressway Guide Signs 2E-2
2E- 6. Reflectorization or Illumination 2E-2
2E- 7. Size of Expressway Guide Signs 2E-2
2E- 8. Number of Signs at an Overhead Installation 2E-3
2E- 9. Amount of Legend on Expressway Guide Signs 2E-3
2E-10. Style of Lettering 2E-3
2E-11. Size of Lettering 2E-4
2E-12. Interline and Edge Spacing 2E-6
2E-13. Abbreviations 2E-6
2E-14. Symbols 2E-7
2E-15. Arrows for Interchange Guide Signs 2E-7
2E-16. Viewing Factors 2E-7
2E-17. Overhead Sign Installations 2E-7
2E-18. Urban Expressways 2E-8
2E-19. Expressway Guide Sign Classification 2E-8

Scan by Kittelson LLC

		Page
	2E-20. Route Markers and Trailblazers	2E-9
	2E-21. Signs for Intersections at Grade	2E-9
	2E-22. Uniform Signing by Type of Interchange	2E-9
	2E-23. Expressway Interchange Classification	2E-9
	2E-24. Interchange and Exit Numbering	2E-10
	2E-25. Interchange Guide Signs	2E-10
	2E-26. Advance Guide Signs (fig. 2-11)	2E-10
	2E-27. Next Exit Supplemental Sign (fig. 2-12)	2E-12
	2E-28. Other Supplemental Signs (fig. 2-12)	2E-12
	2E-29. Exit Direction Signs (fig. 2-13)	2E-14
	2E-30. Gore Signs (fig. 2-14)	2E-15
	2E-31. Sign Spreading and Pull Thru Signs (fig. 2-15, 2-16)	2E-16
	2E-32. Post-Interchange Signs	2E-18
	2E-33. Distance Signs (fig. 2-17)	2E-18
	2E-34. Interchange Sequence Series Signs (fig. 2-18)	2E-19
	2E-35. Community Interchanges Identification Sign (E8-2, fig. 2-19)	2E-20
	2E-36. Next (X) Exits Area Sign (fig. 2-20)	2E-21
	2E-37. Signing for General Motorist Services (fig. 2-21)	2E-21
	2E-38. Rest and Scenic Areas	2E-22
	2E-39. Recreational and Cultural Interest Area Signs	2E-22
	2E-40. Milepost Markers	2E-22
	2E-41. Wrong-Way Traffic Control (fig. 2-22a and 2-22b)	2E-23
	2E-42. Miscellaneous Guide Signs (fig. 2-22)	2E-26
	2E-43. Weigh Station Signing	2E-26
	2E-44. Special Signing on Expressway Approaches and Connecting Roadways	2E-26

F. Guide Signs—Freeways

Section	2F- 1. Scope of Freeway Sign Standards	2F-1
	2F- 2. Freeway Signing Principles	2F-1
	2F- 3. General Characteristics of Freeway Signing	2F-2
	2F- 4. Characteristics of Urban Freeway Signing	2F-2
	2F- 5. Characteristics of Rural Freeway Signing	2F-3
	2F- 6. Sign Layouts	2F-3
	2F- 7. Designation of Destinations	2F-3
	2F- 8. Limit on Destination Legends	2F-4
	2F- 9. Routing to a Given Destination	2F-4
	2F-10. Overhead Sign Installations	2F-4
	2F-11. Style of Lettering and Legend Spacing	2F-4
	2F-12. Sign Borders	2F-7
	2F-13. Color, Reflectorization, and Illumination	2F-7
	2F-14. Sign Arrows	2F-8
	2F-15. Viewing Factors	2F-8
	2F-16. Vertical Clearance	2F-8
	2F-17. Horizontal Clearance	2F-8
	2F-18. Interchange Classification	2F-9
	2F-19. Interchange Exit Numbering (figs. 2-23 through 2-25)	2F-9
	2F-20. Interchange Guide Signs	2F-12
	2F-21. Post Interchange Signs	2F-13
	2F-22. Signing by Class of Interchange	2F-14
	2F-23. Interchanges Between Freeways (fig. 2-26 through 2-32)	2F-14
	2F-24. Diagrammatic Signs (figs. 2-22, 2-27 through 2-30, 2-33)	2F-15
	2F-25. Signing for Interchange Lane Drops (figs. 2-31 through 2-33)	2F-18

Scan by Kittelson LLC

Page

2F-26. Cloverleaf (figs. 2-3, 2-35) 2F-22
2F-27. Cloverleaf with Collector-Distributor Roadways (fig. 2-30) 2F-22
2F-28. Partial Cloverleaf (fig. 2-37) 2F-22
2F-29. Diamond (fig. 2-32) 2F-29
2F-30. Urban Diamond (fig. 2-33) 2F-29
2F-31. Closely Spaced Interchanges (fig. 2-41) 2F-29
2F-32. Minor Interchange (fig. 2-35) 2F-29
2F-33. Signing for General Motorist Services (fig. 2-43) 2F-34
2F-34. Specific Services Information 2F-37
2F-35. Rest and Scenic Area Signs (fig. 2-44) 2F-38
2F-36. Tourist Information and Welcome Centers 2F-39
2F-37. Radio Information Signing 2F-40
2F-37.1 Carpool Information Signing 2F-41
2F-38. Weigh Station Signing 2F-42
2F-39. Milepost Markers 2F-42
2F-40. Route Markers and Trailblazers (figs. 2-45, 2-46) 2F-42
2F-41. Miscellaneous Freeway Guide Signs 2F-44
2F-42. Signing on Freeway Approaches 2F-44

G. Signing for Civil Defense

Section 2G- 1. Civil Defense Emergencies 2G-1
2G- 2. Design of Civil Defense Signs 2G-1
2G- 3. Evacuation Route Marker (CD-1) 2G-2
2G- 4. Area Closed Sign (CD-2) 2G-3
2G- 5. Traffic Regulation Post Sign (CD-3) 2G-3
2G- 6. Emergency Speed Sign (CD-4) 2G-4
2G- 7. Road Use Permit Sign (CD-5) 2G-4
2G- 8. Emergency Aid Centers Sign (CD-6) 2G-5
2G- 9. Fallout Shelter Directional Sign (CD-7) 2G-5

Part III—MARKINGS

A. General Principles

Section 3A- 1. Functions and Limitations 3A-1
3A- 2. Standardization of Application 3A-1
3A- 3. Materials 3A-2
3A- 4. Colors 3A-2
3A- 5. General Principles—Longitudinal Pavement Markings 3A-2
3A- 6. Widths and Patterns of Longitudinal Lines 3A-3
3A- 7. Types of Longitudinal Lines 3A-3
3A- 8. Transverse Markings 3A-4
3A- 9. Curb Markings 3A-4

B. Applications of Pavement and Curb Markings

Section 3B- 1. Center Lines 3B-1
3B- 2. Lane Lines 3B-1
3B- 3. No-Passing Zone Markings 3B-2
3B- 4. Application of No-Passing Zone Markings 3B-2
3B- 5. Warrants for No-Passing Zones at Curves 3B-8
3B- 6. Pavement Edge Lines 3B-8
3B- 7. Pavement Marking Extensions Through Intersections or Interchanges. 3B-11
3B- 8. Lane Reduction Transitions 3B-11
3B- 9. Channelizing Line 3B-14
3B-10. Median Islands Formed by Pavement Markings 3B-14

Scan by Kittelson LLC

Page

6B-38. Detour Signs and Markers (M4-8, 9 and 10) 6B-28
6B-39. Pilot Car Sign (G20-4) 6B-29

C. Barricades and Channelizing Devices

Section 6C- 1. Function 6C-1
6C- 2. Channelization 6C-1
6C- 3. Cone Design 6C-2
6C- 4. Cone Application 6C-3
6C- 5. Vertical Panel-Design and Application 6C-3
6C- 6. Drum Design 6C-4
6C- 7. Drum Application 6C-4
6C- 8. Barricade Design 6C-4
6C- 9. Barricade Application 6C-7
6C-10. Portable Barrier—Design and Application 6C-8
6C-11. High Level Warning Device—Design and Application 6C-9

D. Markings

Section 6D- 1. Pavement Markings Application 6D-1
6D- 2. Delineators 6D-2

E. Lighting Devices

Section 6E- 1. Function 6E-1
6E- 2. Floodlights 6E-1
6E- 3. Hazard Identification Beacons (Flashing Electric Lights) 6E-1
6E- 4. Steady Burning Electric Lamps 6E-2
6E- 5. Warning Lights 6E-2
6E- 6. Special Lighting Units 6E-3
6E- 7. Advance Warning Flashing or Sequencing Arrow Panels 6E-4
6E- 8. Advance Warning Arrow Panel Application 6E-4
6E- 9. Advance Warning Arrow Panel Specifications 6E-5

F. Control of Traffic Through Work Areas

Section 6F- 1. Function 6F-1
6F- 2. Hand Signaling Devices 6F-1
6F- 3. Flaggers 6F-1
6F- 4. Flagging Procedures 6F-2
6F- 5. Flagger Stations 6F-4
6F- 6. One-Way Traffic Control 6F-4
6F- 7. Flagger Control 6F-5
6F- 8. Flag-Carrying or Official Car 6F-5
6F- 9. Pilot Car 6F-5
6F-10. Traffic Control Signals 6F-6

G. Expressways and Limited Access Facilities

Section 6G- 1. Application of Standards 6G-1
6G- 2. Problem Areas 6G-1
6G- 3. Signs 6G-2
6G- 4. Barricades and Channelization 6G-2
6G- 5. Lighting Devices 6G-3
6G- 6. Control of Traffic 6G-3

Part VII—TRAFFIC CONTROLS FOR SCHOOL AREAS

A. General

Section 7A- 1. Need for Standards 7A-1
7A- 2. School Routes and Established School Crossings 7A-3
7A- 3. School Crossing Control Criteria 7A-3

Scan by Kittelson LLC

		Page
	7A- 4. Scope	7A-4
	7A- 5. Application of Standards	7A-4
	7A- 6. Engineering Study Required	7A-4
	7A- 7. Maintenance of Traffic Control Devices	7A-4
	7A- 8. Legal Authority	7A-4
	7A- 9. Removal of Confusing Advertising	7A-5
	7A-10. Meaning of "Shall," "Should" and "May"	7A-5
B. Signs		
Section	7B- 1. Design of Signs	7B-1
	7B- 2. Dimensions	7B-1
	7B- 3. Lettering	7B-1
	7B- 4. Sign Borders	7B-1
	7B- 5. Illumination and Reflectorization	7B-2
	7B- 6. Position of Signs	7B-2
	7B- 7. Height of Signs	7B-2
	7B- 8. Erection of Signs	7B-2
	7B- 9. School Advance Sign (S1-1)	7B-2
	7B-10. School Crossing Sign (S2-1)	7B-3
	7B-11. School Bus Stop Ahead Sign (S3-1)	7B-3
	7B-12. School Speed Limit Signs (S4-1, S4-2, S4-3, S4-4)	7B-4
	7B-13. Parking and Stopping Signs (R7 Series)	7B-5
C. Markings		
Section	7C- 1. Functions and Limitations of Markings	7C-1
	7C- 2. Standardization	7C-1
	7C- 3. Crosswalk Lines	7C-1
	7C- 4. Stop Lines	7C-2
	7C- 5. Curb Markings for Parking Restrictions	7C-2
	7C- 6. Word and Symbol Markings	7C-2
D. School Area Traffic Signals		
Section	7D- 1. Definition	7D-1
	7D- 2. Advantages and Disadvantages	7D-1
	7D- 3. Standardization	7D-1
	7D- 4. Warrants	7D-2
	7D- 5. Meaning of Signal Indications	7D-2
	7D- 6. Intersection and Non-Intersection Installations	7D-4
	7D- 7. Controllers	7D-5
	7D- 8. Pedestrian Detectors	7D-5
	7D- 9. Operation of Pedestrian Signals	7D-5
	7D-10. Coordination with Adjacent Signals	7D-7
	7D-11. Vehicle Change Interval	7D-7
	7D-12. Location and Placement	7D-7
	7D-13. Visibility, Number, and Location of Signal Faces	7D-7
	7D-14. Height of Signal Faces	7D-9
	7D-15. Transverse Location of Traffic Signal Supports and Controller Cabinets	7D-9
	7D-16. Portable Traffic Control Signals	7D-9
	7D-17. Area of Control	7D-10
	7D-18. Design Requirements for School Signal Indications	7D-10
	7D-19. Number of Lenses per Signal Face	7D-10
	7D-20. Size and Design of Signal Lenses	7D-10

Scan by Kittelson LLC

		Page
7D-21.	Arrangement of Lenses in Signal Faces	7D-10
7D-22.	Illumination of Lenses in Vehicular Signal Faces	7D-11
7D-23.	Pedestrian Indications	7D-11
7D-24.	Speed Limit Sign Beacon	7D-12
7D-25.	School Crossings at Existing Signal Installations	7D-12
7D-26.	Signal Indications	7D-12
7D-27.	Signal Control	7D-12
7D-28.	Signal Operation	7D-13

E. Crossing Supervision

Section 7E- 1.	Types of Crossing Supervision	7E-1
7E- 2.	Adult Guards	7E-1
7E- 3.	Legal Authority for Adult Guards	7E-1
7E- 4.	Choice of Adult Guards	7E-1
7E- 5.	Uniform of Adult Guards	7E-2
7E- 6.	Operating Procedures for Adult Guards	7E-2
7E- 7.	Police Officers	7E-2
7E- 8.	Student Patrols	7E-2
7E- 9.	Legal Authority for Student Patrols	7E-2
7E-10.	Choice of Student Patrols	7E-2
7E-11.	Operating Procedures for Student Patrols	7E-3

F. Grade Separated Crossings

Section 7F- 1.	Function	7F-1
7F- 2.	Types of Grade Separated Crossings	7F-1
7F- 3.	Criteria for Use of Grade Separated Crossings	7F-1

Part VIII—TRAFFIC CONTROL SYSTEMS FOR RAILROAD-HIGHWAY GRADE CROSSINGS

A. General

Section 8A- 1.	Functions	8A-1
8A- 2.	Use of Standard Devices	8A-1
8A- 3.	Uniform Provisions	8A-1
8A- 4.	Crossing Closure	8A-2
8A- 5.	Traffic Controls During Construction and Maintenance	8A-2

B. Signs and Markings

Section 8B- 1.	Purpose	8B-1
8B- 2.	Railroad Crossing (Crossbuck) Sign (R15-1, 2)	8B-1
8B- 3.	Railroad Advance Warning Sign (W10-1)	8B-3
8B- 4.	Pavement Markings	8B-5
8B- 5.	Illumination at Grade Crossings	8B-5
8B- 6.	Exempt Crossing Signs (R15-3, W10-1a)	8B-5
8B- 7.	Turn Restrictions	8B-6
8B- 8.	Do Not Stop on Tracks Sign (R8-8)	8B-6
8B- 9.	STOP Signs at Grade Crossings (R1-1, W3-1)	8B-7

C. Signals and Grates

Section 8C- 1.	Purpose and Meaning	8C-1
8C- 2.	Flashing Light Signal—Post Mounted	8C-1
8C- 3.	Flashing Light Signal—Cantilever Supported	8C-2
8C- 4.	Automatic Gate	8C-3

Scan by Kittelson LLC

		Page
8C- 5.	Train Detection	8C-5
8C- 6.	Traffic Signals at or Near Grade Crossings (fig. 8-8)	8C-7
8C- 7.	Component Details	8C-9

D. Systems and Devices

Section 8D- 1.	Selection of Systems and Devices	8D-1

Part IX—TRAFFIC CONTROLS FOR BICYCLE FACILITIES

A. General

Section 9A- 1.	Requirements for Bicyclist Traffic Control Devices	9A-1
9A- 2.	Scope	9A-1
9A- 3.	Definitions Relating to Bicycles	9A-2
9A- 4.	Standardization of Devices	9A-2
9A- 5.	Maintenance	9A-2
9A- 6.	Legal Authority	9A-2
9A- 7.	Meanings of "Shall," "Should," and "May"	9A-3
9A- 8.	Relation to Other Documents	9A-3
9A- 9.	Colors	9A-3

B. Signs

Section 9B- 1.	Application of Signs	9B-1
9B- 2.	Location and Position	9B-1
9B- 3.	Design	9B-1
9B- 4.	Regulatory Signs	9B-2
9B- 5.	Bicycle Prohibition Sign (R5-6)	9B-2
9B- 6.	Motor Vehicle Prohibition Sign (R5-3)	9B-2
9B- 7.	Bicycle Restriction Signs (R9-5 & 6)	9B-3
9B- 8.	Designated Lane Signs (R3-10 & 11)	9B-4
9B- 9.	Travelpath Restriction Signs (R9-7)	9B-4
9B-10.	STOP and YIELD Signs (R1-1, 2)	9B-5
9B-11.	No Parking Signs (R7-9, & 9a)	9B-5
9B-12.	Lane-Use Control Signs (R3-7, R4-4)	9B-6
9B-13.	Warning Signs	9B-6
9B-14.	Bicycle Crossing Sign (W11-1)	9B-6
9B-15.	Hazardous Condition Sign (W8-10)	9B-6
9B-16.	Turn and Curve Signs (W1-1, 2, 4, 5, 6, 7)	9B-7
9B-17.	Intersection Signs (W2-1, 2, 3, 4, 5)	9B-8
9B-18.	Other Warning Signs	9B-9
9B-19.	Guide Signs	9B-10
9B-20.	Bicycle Route Sign (D11-1)	9B-10
9B-21.	Bicycle Route Marker (M1-8)	9B-10
9B-22.	Supplemental Plaques for Route Signs and Route Markers	9B-13
9B-23.	Bicycle Parking Area Sign (D4-3)	9B-14

C. Markings

Section 9C- 1.	Functions and Limitations of Markings	9C-1
9C- 2.	General Principles	9C-1
9C- 3.	Marking Patterns and Colors	9C-1
9C- 4.	Marking of Designated Bikeways	9C-5
9C- 5.	Word Messages and Symbols Applied to the Pavement	9C-5
9C- 6.	Object Markings on Bicycle Trails	9C-5

D. Signals

Section 9D- 1.	Application	9D-1
9D- 2.	Visibility Requirements	9D-1
9D- 3.	Signal Operation for Bicycles	9D-1

Scan by Kittelson LLC

Simply stated, uniformity means treating similar situations in the same way. The use of uniform traffic control devices does not, in itself, constitute uniformity. A standard device used where it is not appropriate is as objectionable as a nonstandard device; in fact, this may be worse, in that such misuse may result in disrespect at those locations where the device is needed.

1A-3 Responsibility for Traffic Control Devices

The responsibility for traffic control devices rests with a multitude of governmental jurisdictions. In virtually all States, traffic control devices placed and maintained by State and local officials are required by statute to conform to a State Manual which shall be in substantial conformance with this Manual. Many Federal agencies have regulations requiring standards in conformance with this Manual for their control device applications.

The Uniform Vehicle Code has the following provision in Section 15-104 for the adoption of a uniform manual:

> "The (State Highway Agency) shall adopt a manual and specifications for a uniform system of traffic-control devices consistent with the provisions of this act for use upon highways within this State. Such uniform system shall correlate with and so far as possible conform to the system set forth in the most recent edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, and other standards issued or endorsed by the Federal Highway Administrator."

Under authority granted by Congress in 1966, the Secretary of Transportation has decreed that traffic control devices on all streets and highways in each State shall be in substantial conformance with standards issued or endorsed by the Federal Highway Administrator.

1A-3.1 Placement Authority

Traffic control devices shall be palced only by the authority of a public body or official having jurisdiction, for the purpose of regulating, warning, or guiding traffic. No traffic control device or its support shall bear any advertizing or commercial message, or any other message that is not essential to traffic control.

Any unauthorized sign placed on the highway right-of-way by a private organization or individual constitutes a public nuisance. All unofficial and nonessential signs should be removed.

With proper authority being given, construction contractors and public utility companies are permitted to erect construction and maintenance signs at work sites to protect the public, equipment, and workmen, provided that such signs conform to the standards of this Manual.

Scan by Kittelson LLC

All traffic islands shall be installed by the authority of the public body or official having jurisdiction. For those islands that are elements of street and highway design and are included in the design of the street or highway, no specific authority is required.

All regulatory devices, if they are to be enforced, need to be backed by applicable laws, ordinances, or regulations. Effective traffic control depends not only on appropriate application of devices, but on reasonable enforcement of regulations as well. Standards in this Manual are based on that concept.

1A-4 Engineering Study Required

The decision to use a particular device at a particular location should be made on the basis of an engineering study of the location. Thus, while this Manual provides standards for design and application of traffic control devices, the Manual is not a substitute for engineering judgment. It is the intent that the provisions of this Manual be standards for traffic control devices installation, but not a legal requirement for installation.

Qualified engineers are needed to exercise the engineering judgement inherent in the selection of traffic control devices, just as they are needed to locate and design the roads and streets which the devices complement. Jurisdictions with responsibility for traffic control, that do not have qualified engineers on their staffs, should seek assistance from the State highway department, their county, a nearby large city, or a traffic consultant.

1A-5 Meanings of "Shall," "Should" and "May"

In the Manual sections dealing with the design and application of traffic control devices, the words "shall," "should" and "may" are used to describe specific conditions concerning these devices. To clarify the meanings intended in this Manual by the use of these words, the following definitions apply:

1. SHALL—A *mandatory* condition. Where certain requirements in the design or application of the device are described with the "shall" stipulation, it is mandatory when an installation is made that these requirements be met.

2. SHOULD—An *advisory* condition. Where the word "should" is used, it is considered to be advisable usage, recommended but not mandatory.

3. MAY—A *permissive* condition. No requirement for design or application is intended.

Scan by Kittelson LLC

1A-6 Developing New Standards and Interpretation and Revision of Existing Standards

Advances in technology will produce changes in the highway, the vehicle, and in driver proficiency and portions of the system of control devices in this Manual will gradually become obsolete. In addition, unique situations often arise for device applications which may require interpretation or clarification of this Manual. It is important to have a procedure for recognizing these developments and for introducing new ideas and modifications into the system.

The following procedures will generally apply to the handling of interpretations, experimentation and changes to the MUTCD:

1. Requests for any interpretation, permission to experiment or change may be sent to one of the appropriate organizations of the National Advisory Committee or directly to the NAC Executive Director, Office of Traffic Operations, HTO-20, Federal Highway Administration, Washington, D.C., 20590. Requests forwarded to particular organizations will provide them the opportunity to review the submission and comment before forwarding them to the NAC Executive Director.

2. Requests for interpretation or change in the Manual should contain the following information:

   (a) A statement indicating what change, modification, or question is to be resolved.

   (b) Any illustration which would be helpful to understand the request.

   (c) Any supporting research data which is pertinent to the item to be reviewed.

3. Requests for permission to experiment should contain the following information:

   (a) A statement indicating the nature of the problem.

   (b) A description of the proposed change, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.

   (c) Any illustration which would be helpful to understand the experimental device or use of this device.

   (d) Any supporting data as to how the experimental device was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how this choice of device or application was arrived at.

Additional details are available from the Federal Highway Administration.

Scan by Kittelson LLC

4. Request will be classified as follows:

   (a) *Interpretation*—this includes application and operation of standard traffic control devices, official meanings of standard traffic control devices, or variations from standard device designs.

   (b) *Change*—this includes consideration of new devices to replace a present standard device, or revisions to recommended application or meaning criteria.

   (c) *Experimentation*—this includes consideration of testing or evaluating a new traffic control device, its application or manner of use.

5. The Federal Highway Administration will be responsible for notifying the party originating the request and providing the parent organization of the National Advisory Committee with a copy of each official ruling.

6. The Federal Highway Administration will maintain files on all officially designated requests and actions taken on the development of improved standards.

7. Periodically, text revisions and approved interpretations and experimentations will be published and distributed by the Government Printing Office to those Manual owners shown on the GPO subscription list. For additional copies or information about such revisions, write to the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

1A-7 Relation to Other Documents

Two publications by the National Committee on Uniform Traffic Laws and Ordinances are specifically designed to provide the content and language of legislation needed to give regulatory devices the same meaning in all jurisdictions. These are the Uniform Vehicle Code (chapter 11, Rules of the Road) for States, and the Model Traffic Ordinance for municipalities. Both the Code and the Ordinance require the placing of signs or other traffic control devices to make some of their provisions effective, and both define the legal meaning of certain devices. The Code directs the State authorities to adopt a manual for a uniform system of traffic control devices, and requires all devices to conform thereto. The Ordinance also requires municipal devices to conform with the State manual. The adoption of appropriate legislation is an essential step toward uniformity.

Scan by Kittelson LLC

To the extent they are incorporated by specific reference, the following documents are made a part of this Manual:

Standard Alphabets for Highway Signs and Pavement Markings—Federal Highway Administration, 1977 Edition

Standard Color Tolerance Charts—Federal Highway Administration, 1970

Standard Highway Signs Booklet—Federal Highway Administration, 1979 Edition

Adjustable Face Vehicle Traffic Control Signal Head Standards—Institute of Transportation Engineers, 1970

Adjustable Face Pedestrain Signal Head Revised Standards—Institute of Transportation Engineers, 1975

National Standards for Specific Information Signs—Federal Highway Administration, 1979 (Federal-Aid Highway Program Manual 6-8-3-8)

Standard for Flashing and Steady Burn Barricade Warning Lights—Institute of Transportation Engineers, 1977

Standard for Traffic Signal Lamps—Institute of Transportation Engineers, 1967

Other documents that are useful sources of information with respect to utilization of these standards include:

Transportation and Traffic Engineering Handbook—Institute of Transportation Engineers, 1976

Highway Capacity Manual—Transportation Research Board, 1965

A Policy on Geometric Design of Rural Highways—American Association of State Highway and Transportation Officials, 1965

A Policy on Design of Urban Highway, and Arterial Streets—American Association of State Highway and Transportation Officials, 1973

Manual on Traffic Engineering Studies—Institute of Transportation Engineers, 1976

Volume 12, Highway Safety Program Manual, Highway Design, Construction, and Maintenance—Federal Highway Administration

Volume 13, Highway Safety Program Manual, Traffic Engineering Services—Federal Highway Administration

Traffic Control Devices Handbook; and Operating Guide—Federal Highway Administration, 1975

1A-8 Color Code

The following color code establishes general meaning for eight colors in a total of twelve colors that have been identified as being appropriate for use in conveying traffic control information. Central values and tolerance limits for each color are available. *

Scan by Kittelson LLC

The four colors for which no meaning has been assigned are being reserved for future applications. The meanings described in this Section are of a general nature. More specific assignments of colors are given in the individual Parts of this Manual relating to each class of devices.

Color Code:

YELLOW—General Warning.
RED—Stop or prohibition.
BLUE—Motorist services guidance.
GREEN—Indicated movements permitted, direction guidance.
BROWN—Recreational and cultural interest guidance.
ORANGE—Construction and maintenance warning.
BLACK—Regulation.
WHITE—Regulation.
PURPLE—Unassigned.
STRONG YELLOW-GREEN—Unassigned.
LIGHT BLUE—Unassigned.
CORAL—Unassigned.

1a-9 Definitions of Words and Phrases

Unless otherwise defined herein, definitions contained in the most recent editions of the Uniform Vehicle Code, AASHTO Highway Definitions, and other documents specified in Section 1A-7 are also incorporated and adopted by reference.

---

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

Scan by Kittelson LLC

set forth in the following pages. However, engineering judgment is essential to the proper use of signs, the same as with other traffic control devices. Traffic engineering studies may indicate that signs would be unnecessary at certain locations. The judgment resulting from traffic engineering studies of physical and traffic factors should be depended upon to determine locations where signs are deemed necessary.

With the increase in traffic volumes and the desire to provide motorists information in addition to regulatory, warning, and directional guidance, there is a need to establish an order of priority for sign installation. This is especially critical where space is limited for sign installation and there is a demand for several different types of signs. Overloading motorists with too much information can cause improper driving and impair safety. Some information is more important than other information. Generally, in case of conflict, regulatory and warning signing whose location is critical should be displayed rather than guide signing. Information of a less important nature and extraneous information should be moved to less critical locations or deleted. (Additional guidance on prioritizing of signs is contained in the Traffic Control Devices Handbook.) II-27 (c)

It is recognized that urban traffic conditions differ from rural, and in many instances signs must be applied and located differently. Where pertinent and practical, therefore, this Manual sets forth separate recommendations for rural and urban conditions.

2A-5 Variable Message Signs

Variable message signs are designed to have one or more messages that may be displayed or deleted as required. Such a sign may be changed manually, by remote control, or by automatic controls that can "sense" the conditions that require special sign messages.

Variable message signs, with more sophisticated technologies, are gaining more widespread use to inform motorists of variable situations, particularly along more congested traffic corridors.

It is recognized that due to technological limitations many variable message signs cannot conform to the exact sign shape, color and dimensions specified in these standards. Because technology is developing so rapidly in this area of signing, this Manual has not specified detailed standards for variable message signs. Nevertheless, it is essential that variable message signs ascribe to the principles established in the Manual, and to the extent practicable, with the design and applications prescribed herein.

Highway and transportation organizations are encouraged to develop and experiment with variable message signs (sec. 1A-6) and to carefully evaluate installations where used so that specific Manual standards may be incorporated in the future.

2A-6 Excessive Use of Signs

Care should be taken not to install too many signs. A conservative use of regulatory and warning signs is recommended as these signs, if used to excess, tend to lose their effectiveness. On the other hand, a frequent display of route markers and directional signs to keep the driver informed of his location and his course will not lessen their value.

Scan by Kittelson LLC

2A-7 Classification of Signs

Functionally, signs are classified as follows:

Regulatory signs give notice of traffic laws or regulations.

Warning signs call attention to conditions on, or adjacent to, a highway or street that are potentially hazardous to traffic operations.

Guide signs show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information.

2A-8 Standardization of Signs

In situations where messages are required other than those herein provided for, the signs shall be of the same shape and color as standard signs of the same functional type.

The term "legend" as used in this Manual includes all word messages and symbol designs that are intended to convey specific meanings. For purposes of design, borders are included as part of the sign legend.

The basic requirements of a highway sign are that it be legible to those for whom it is intended and that it be understood in time to permit a proper response. This means high visibility, lettering or symbols of adequate size, and a short legend for quick comprehension by a driver approaching a sign at high speed. Standardized colors and shapes are specified so that the several classes of traffic signs can be promptly recognized. Simplicity and uniformity in design, position, and application are important.

2A-9 Design

Uniformity in design includes shape, color, dimensions, legends, and illumination or reflectorization. This Manual shows many typical standard signs approved for use on streets and highways. Detailed drawings of these and other approved signs are available to State and local highway and traffic authorities, sign manufacturers, and similary interested agencies.* All symbols shall be unmistakably similar to those shown, and where a word message is applicable, the wording shall be as herein provided. Most standard symbols are oriented facing left; however, this does not preclude the use of mirror images of these symbols where the reverse orientation might better convey to vehicle operators a direction of movement. Standardization of these designs does not preclude further improvement by minor changes in the proportion of symbols, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.

In the specifications for individual signs, the legend, color, and size are shown in the accompanying illustrations, and are not always detailed in the text.

2A-10 Shapes

Standard sign shapes are:

The octagon shall be reserved exclusively for the STOP sign.

The equilateral triangle, with one point downward, shall be reserved exclusively for the YIELD sign.

---

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

Scan by Kittelson LLC

The round shape shall be used for the advance warning of a railroad crossing and for the civil defense evacuation route marker.

The pennant shape, an isosceles triangle, with its longest axis horizontal, shall be used to warn of no passing zones.

The diamond shape shall be used only to warn of existing or possible hazards either on the roadway or adjacent thereto.

The rectangle, ordinarily with the longer dimension vertical, shall be used for regulatory signs, with the exception of STOP signs and YIELD signs.

The rectangle, ordinarily with the longer dimension horizontal, shall be used for guide signs, with the exception of certain route markers and recreational area guide signs.

The trapezoid shape, as shown in section 2D-44, may be used for recreational area guide signs.

The pentagon, point up, shall be used for School Advance and School Crossing signs (Part VII).

Other shapes are reserved for special purposes; for example, the shield or other characteristic design for route markers and crossbuck for railroad crossings.

2A-11 Sign Colors

The colors to be used on standard signs shall be as follows:

Red is used only as a background color for STOP signs, multiway supplemental plates, DO-NOT-ENTER messages, WRONG WAY signs and on Interstate route markers; as a legend color for YIELD signs, parking prohibition signs, the circular outline and diagonal bar prohibitory symbol.

Black is used as a background on ONE WAY signs, certain weigh station signs and night speed limit signs as specified herein. Black is used as a message on white, yellow and orange signs.

White is used as the background for route markers, guide signs, the Fallout Shelter Directional sign, and regulatory signs, except STOP signs, and for the legend on brown, green, blue, black and red signs.

Orange is used as a background color for construction and maintenance signs and shall not be used for any other purpose.

Yellow is used as a background color for warning signs, except where orange is specified herein, and for school signs (Part VII).

Brown is used as a background color for guide and information signs related to points of recreational or cultural interest.

Green is used as a background color for guide signs (other than those using brown or white), mileposts, and as a legend color with a white background for permissive parking regulations.

Blue is used as a background color for information signs related to motorist services (including police services and rest areas) and the Evacuation Route Marker.

Scan by Kittelson LLC

Four other colors—purple, light blue, coral, and strong yellow-green—have been identified as suitable for highway use and are being reserved for future needs.

Whenever white is specified herein as a sign color, it is understood to include silver-colored reflecting coatings or elements that reflect white light.

2A-12 Dimensions

The sign dimensions prescribed in this Manual shall be standard for application on public highways. Increases above these standard sizes are desirable where greater legibility or emphasis is needed. For expressways and freeways, special designs or large signs are prescribed. In the enlargement of signs, standard shapes and colors shall be used and standard proportions shall be retained insofar as practicable. Wherever practical the overall dimensions of the sign plates should be increased in 6-inch increments. Sign sizes for use on the different classes of highways are shown in Standard Highway Signs*.

2A-13 Symbols

Symbol designs shall in all cases be essentially like those shown in this Manual and the Standard Highway Signs Booklet.

A broader use of symbols in preference to word messages is a desirable and important step toward the greater safety and facilitation of traffic.

Sometimes a change from word messages to symbols requires significant time for public education and transition. Consequently, this Manual includes educational plaques to accompany some new symbol signs.

All symbol signs which are readily recognizable by the public may be erected without educational plaques. New warning or regulatory symbol signs not readily recognizable by the public, shall be accompanied by an educational plaque which is to remain in place for at least 3 years after initial installation. No special effort need be made to remove educational plaques as long as they are in serviceable condition.

2A-14 Word Messages

Where applicable, standard wordings as shown in this Manual shall be used for sign legends. Word messages should be as brief as possible and the lettering should be large enough to provide the necessary legibility distance.

Abbreviations should be kept to a minimum, and should include only those that are commonly recognized and understood, such as Ave., Blvd., N. (for north), R. R., or Jct. Since long names can often be partially recognized by their length, it is sometimes permissible to put them in slightly smaller lettering than would otherwise be required.

* Available from GPO, see page ii.

Scan by Kittelson LLC

2A-15 Lettering

Sign lettering shall be in upper-case letters of the type approved by the Federal Highway Administration, except that destination names may be in lower-case lettering, with initial upper-case. Standard upper-case and lower-case alphabets have been prepared.*

Use of the Series B alphabet is restricted to street-name signs, parking signs, and other similar signs where limited breadth and stroke widths are required for design purposes.

As a guide to choice of alphabets, tests have shown that, for any given legend, better legibility can be obtained by using a relatively wide spacing between letters than by using wider and taller letters with a cramped space.

2A-16 Illumination and Reflectorization

Regulatory and warning signs, unless excepted in the standards covering a particular sign or group of signs, shall be reflectorized or illuminated to show the same shape and color both by day and night. All overhead sign installations should be illuminated where an engineering study shows that reflectorization will not perform effectively. Reflectorization, non-reflectorization, or illumination of guide signs shall be as provided in subsequent sections.

2A-17 Means of Illumination

Illumination may be by means of:

1. A light behind the sign face, illuminating the main message or symbol, or the sign background, or both, through a translucent material; or

2. An attached or independently mounted light source designed to direct essential uniform illumination over the entire face of the sign; or

3. Some other effective device, such as luminous tubing or fiber optics shaped to the lettering or symbol, patterns of incandescent light bulbs, or luminescent panels that will make the sign clearly visible at night.

The requirements for sign illumination are not considered to be satisfied by street or highway lighting, or by strobe lighting.

2A-18 Means of Reflectorization

Reflectorization may be by means of:

1. Reflector "buttons" or similar units set into the symbol, message and border; or

2. A material that has a smooth, sealed outer surface, either on the sign background; or where a white legend is used on a colored background, reflectorization may be used for the symbol or message and border. VI-11 (c)

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

Scan by Kittelson LLC

2A-19 Sign Borders

With few exceptions, all signs illustrated herein shall have a border of the same color as the legend, at or just inside the edge. A dark border should be set in from the edge, while a white border should extend to the edge of the panel. A suitable border for 30-inch signs with a light background is from ½ to ¾ of an inch in width, ½ inch from the edge. For similar signs with a white border, a width of an inch is appropriate. For other sizes the border widths should be of similar proportions, but not to exceed the stroke-width of the major lettering of the sign. On signs exceeding 6 feet by 10 feet in size, the border should be approximately 2 inches wide, or on unusually large signs, 3 inches.

The corners of the sign border shall be rounded. Where practicable, the corners of the sign panels should also be rounded to fit the border.

2A-20 Supplemental Beacons

A hazard identification beacon (sec. 4E-1, 4E-2, 4E-5 and 7B-12) may be used only to supplement an appropriate warning or regulatory sign.

2A-21 Standardization of Location

Standardization of position cannot always be attained in practice; however, the general rule is to locate signs on the right-hand side of the roadway, where the driver is looking for them. On wide expressways, or where some degree of lane-use control is desirable, or where space is not available at the roadside, overhead signs are often necessary. Signs in any other locations ordinarily should be considered only as supplementary to signs in the normal locations. Under some circumstances signs may be placed on channelizing islands or (as on sharp curves to the right) on the left-hand shoulder of the road, directly in front of approaching vehicles. A supplementary sign located on the left of the roadway is often helpful on a multi-lane road where traffic in the right-hand lane may obstruct the view to the right.

Normally, signs should be individually erected on separate posts or mountings except where one sign supplements another or where route or directional signs must be grouped. In general, signs should be located to optimize nighttime visibility and minimize the effects of mud spatter and in conformance with safety factors related to fixed obstacles near the roadway. Signs should be located so that they do not obscure each other or are hidden from view by other roadside objects. Signs requiring different decisions by the vehicle operator must be spaced sufficiently far apart for the required decisions to be made safely. The spacing shall be determined in units of time as determined by the expected vehicle approach speed.

Standard positions for a number of typical signs are illustrated in figures 2-1 to 2-4.

Scan by Kittelson LLC

continuous flow of traffic, making STOP signs unnessary even on the entering roadways. Where at-grade intersections are temporarily justified for local traffic in sparsely populated areas, STOP signs should be used on the entering roadways to protect the through traffic. STOP signs may also be required at the end of diverging roadways at the intersection with other highways not designed as expressways. In most of these cases, the speeds will not warrant any great increase in the sign sizes.

STOP signs shall not be erected at intersections where traffic control signals are operating. The conflicting commands of two types of control devices are confusing. If traffic is required to stop when the operation of the stop-and-go signals is not warranted, the signals should be put on flashing operation with the red flashing light facing the traffic that must stop.

Where two main highways intersect, the STOP sign or signs should normally be posted on the minor street to stop the lesser flow of traffic. Traffic engineering studies, however, may justify a decision to install a STOP sign or signs on the major street, as at a three-way intersection where safety considerations may justify stopping the greater flow of traffic to permit a left-turning movement.

STOP signs may be used at selected railroad-highway grade crossings only after their need has been determined by a detailed traffic engineering study. Use of the STOP sign at railroad-highway grade crossings is described in Section 8B-9. VIII-5 (c)

Portable or part-time STOP signs shall not be used except for emergency purposes. Also, STOP signs should not be used for speed control.

2B-6 Multiway Stop Signs

The "Multiway Stop" installation is useful as a safety measure at some locations. It should ordinarily be used only where the volume of traffic on the intersecting roads is approximately equal. A traffic control signal is more satisfactory for an intersection with a heavy volume of traffic.

Any of the following conditions may warrant a multiway STOP sign installation (sec. 2B-4):

1. Where traffic signals are warranted and urgently needed, the multiway stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the signal installation.

Scan by Kittelson LLC

2. An accident problem, as indicated by five or more reported accidents of a type susceptible of correction by a multiway stop installation in a 12-month period. Such accidents include right- and left-turn collisions as well as right-angle collisions.

3. Minimum traffic volumes:
   (a) The total vehicular volume entering the intersection from all approaches must average at least 500 vehicles per hour for any 8 hours of an average day, and
   (b) The combined vehicular and pedestrian volume from the minor street or highway must average at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour, but
   (c) When the 85-percentile approach speed of the major street traffic exceeds 40 miles per hour, the minimum vehicular volume warrant is 70 percent of the above requirements.

2B-7 Yield Sign (R1-2)

The YIELD sign assigns right-of-way to traffic on certain approaches to an intersection. Vehicles controlled by a YIELD sign need stop only when necessary to avoid interference with other traffic that is given the right-of-way.

The YIELD sign shall be a downward pointing, equilateral triangle having a red border band and a white interior and the word YIELD in red inside the border band. The standard size shall be 36 × 36 × 36 inches.

R1–2
36" x 36" x 36"

2B-8 Warrants for Yield Signs

The YIELD sign may be warranted:

1. On a minor road at the entrance to an intersection where it is necessary to assign right-of-way to the major road, but where a stop is not necessary at all times, and where the safe approach speed on the minor road exceeds 10 miles per hour.

Scan by Kittelson LLC

sidewalks are provided. This sign shall be in only one standard size of 18 × 24 inches, and need not be reflectorized. It should be erected on the right-hand side of the road where pedestrians must walk on the pavement or road shoulder in the absence of pedestrian pathways or sidewalks.

The No Hitchhiking sign may be used to post prohibition against standing in the roadway for the purpose of soliciting a ride. It may be erected at locations where hitchhiking has been observed contrary to law. The R9-4 word message sign may be used as an alternate to the R9-4a symbol sign.

R9–1
18″ x 24″

R9–4
18″ x 24″

2B-36 Pedestrian Crossing Signs (R9-2, R9-3)

Pedestrian Crossing signs may be used selectively to aid in limiting pedestrian crossing to safe places. They will ordinarily be required only in urban areas and, when used, shall be erected to face the traffic for which they are intended. The messages shown are typical. These signs need not be reflectorized.

The CROSS ONLY AT CROSS WALKS sign (R9-2) may be used, where crosswalks are clearly defined, to discourage jay-walking or unauthorized crossing.

The No Pedestrian Crossing sign may be used to prohibit pedestrians from crossing a roadway at a point which is considered to be hazardous, especially in front of a school or other public building where a crossing is not designated. The R9-3 word message sign may be used as an alternate to the R9-3a symbol sign. Supplemental black on white panel R9-3b (R or L), USE CROSSWALK with an arrow, may be used below either sign to designate the direction of the crossing. When R9-3b is used, the educational plaque for R9-3a should be deleted.

Scan by Kittelson LLC

R9–2
12″ x 18″

R9–3a
18″×18″

R9–3b
18″×12″

2B–37 Traffic Signal Signs (R10–1 to 11)

To supplement traffic signal control, auxiliary signs of the type illustrated are often desirable or necessary for the instruction of pedestrians and drivers. Signal instruction signs should be located adjacent to the signal face to which they apply.

Among the traffic signal instruction signs applicable to pedestrians are signs R10–1, 2, 3, and 4. These signs need not be reflectorized.

Permissible as an alternate message for the Pedestrian Actuated Signal sign (R10–3, R10–4) is the legend TO CROSS STREET (arrow) PUSH BUTTON WAIT FOR GREEN (WALK) SIGNAL (R10–3a, R10–4a).

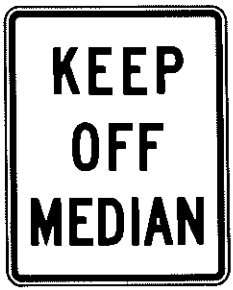
The Pedestrian Actuated Signal sign should be 9 × 12 inches in size and shall be mounted immediately above or incorporated in the pedestrian push-button unit (sec. 4D–6).

Signal instruction signs may be needed at certain locations to clarify signal control. Among the legends for this purpose are LEFT ON ARROW ONLY (R10–5), or LEFT (RIGHT) TURN SIGNAL (R10–10) for compliance with certain turn signals, STOP HERE ON RED (R10–6) for observance of signal limit lines, DO NOT BLOCK INTERSECTION (R10–7) for avoidance of traffic obstructions, and USE LANE(S) WITH GREEN ARROW (R10–8) for obedience to lane-direction control signals.

The NO TURN ON RED sign (R10–11a, 11b) shall be used to indicate that a right turn on red (or left turn on red for one-way streets) is not permitted. For part time prohibitions see section 2B–15. The NO TURN

Scan by Kittelson LLC

The sign should be erected on the left of the roadway within the median wherever there is a tendency for drivers to enter or cross and at random intervals as needed.



R11-1
24" x 30"

R11-2
48" x 30"

2B-39 Road Closed Sign (R11-2)

The ROAD CLOSED sign should be used to mark roads that have been closed to all traffic (except authorized vehicles) because of a temporary emergency. It should not be used where traffic is maintained or where a route is detoured several miles in advance of the actual construction or blockade. In the latter case the Local Traffic Only sign (sec. 2B-40) should be used.

The Road Closed sign shall have a standard, and minimum, size of 48 × 30 inches.

Where the sign faces through traffic, it shall be preceded by an Advance Road Closed warning sign (sec. 6B-17) and, if applicable, an Advance Detour warning sign (sec. 6B-16).

2B-40 Local Traffic Only Sign (R11-3, R11-4)

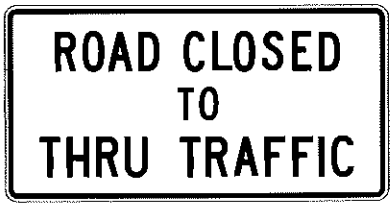
The Local Traffic Only sign should be used where through traffic must detour to avoid a closing of the highway for construction or maintenance work (Part VI), or for a temporary emergency some distance beyond, but where the highway is open for traffic up to the point of closure. It shall carry the legend ROAD CLOSED (I0) MILES AHEAD—LOCAL TRAFFIC ONLY, or optionally for urban application, ROAD CLOSED TO THRU TRAFFIC. Both signs shall be designed as horizontal rectangles.

The words BRIDGE OUT (or similar message) may be substituted for ROAD CLOSED where applicable. Where the sign faces through traffic, it shall be preceded by an Advance Road Closed warning sign

Scan by Kittelson LLC

(sec. 6B-17) with the secondary legend AHEAD and, if applicable, an Advance Detour warning sign (sec. 6B-16).

R11-3
60" x 30"



R11-4
60" x 30"

2B-41 Weight Limit Signs (R12-1 to 5)

Due to seasonal weakening of the road surface, obsolescence of bridges or pavements, or other impairment of roadways, it is often necessary to limit the load permitted on a roadway.

The Weight Limit sign (R12-1) carrying the legend WEIGHT LIMIT (10) TONS, may be used to indicate restrictions pertaining to total vehicle weight including load.

Where the restriction applies to axle weight rather than gross load legend may be AXLE WEIGHT LIMIT (5) TONS (R12-2).

In residential districts, where it is intended to restrict trucks of certain sizes by reference to empty weight, the legend may read NO TRUCKS OVER 7000 LBS EMPTY WT (R12-3).

In areas where multiple regulations of the type described above are applicable, a sign combining the necessary messages on a single panel may be used, such as WEIGHT LIMIT (2) TONS PER AXLE (10) TONS GROSS (R12-4).

Posting of specific load limits may be accomplished by use of the Weight Limit symbol sign (R12-5). This sign contains the legend WEIGHT LIMIT on the top two lines and shows three different truck symbols with the allowable weight limit shown to the right of each symbol as ( ) T. A bottom line of legend stating GROSS WT is permissible if needed for enforcement purposes. Only the truck symbols and their respective weight limits for which restrictions apply need be shown.

A Weight Limit sign shall be located immediately in advance of the section of highway or the structure to which it applies. The standard, and minimum, size shall be 24 × 30 inches but a larger size is desirable on major roads and streets.

Scan by Kittelson LLC

C. WARNING SIGNS

2C-1 Application of Warning Signs

Warning signs are used when it is deemed necessary to warn traffic of existing or potentially hazardous conditions on or adjacent to a highway or street. Warning signs require caution on the part of the vehicle operator and may call for reduction of speed or a maneuver in the interest of his own safety and that of other vehicle operators and pedestrians. Adequate warnings are of great assistance to the vehicle operator and are valuable in safe-guarding and expediting traffic. The use of warning signs should be kept to a minimum because the unnecessary use of them to warn of conditions which are apparent tends to breed disrespect for all signs.

Even on the most modern expressways there may be some conditions to which the driver can be alerted by means of warning signs. These conditions are in varying degrees common to all highways, and existing standards for warning signs are generally applicable to expressways.

Typical locations and hazards that may warrant the use of warning signs are:

1. Changes in horizontal alignment
2. Intersections
3. Advance warning of control devices
4. Converging traffic lanes
5. Narrow roadways
6. Changes in highway design
7. Grades
8. Roadway surface conditions
9. Railroad crossings
10. Entrances and crossings
11. Miscellaneous

Warning signs specified herein cover most conditions that are likely to be met. Special warning signs for highway construction and maintenance operations, school areas, railroad grade crossings and bicycle facilities are dealt with in Parts VI through IX of this Manual. If other warnings are needed, the signs shall be of standard shape and color for warning signs, and the legends shall be brief and easily understood.

The determination of the sign or signs to be erected shall be on the basis of an engineering study using the following sections as guidelines.

2C-2 Design of Warning Signs

Generally, all warning signs in this Part shall be diamond-shaped (square with one diagonal vertical) with black legend and border on a

Scan by Kittelson LLC

yellow background. There are specific exceptions to this rule, some of which are noted in the following sections. The allowance of these exceptions shall not be construed as permitting deviations from the standard messages where standard messages are applicable.

All warning signs having significance during the hours of darkness shall have a fully reflectorized background or be illuminated.

The standard size for each warning sign prescribed herein is shown with the illustration accompanying the specification. Where conditions of speed, volume, or special hazard require greater visibility or emphasis, larger signs should be used, with symbol or legend enlarged approximately in proportion to outside dimensions. Sign sizes for various type facilities can be found in Standard Highway Signs.*

To carry proper emphasis among large signs for other purposes, all warning signs on expressways should be not less than 36 × 36 inches.

To permit the use of standard dies and templates the outside dimensions of warning sign should ordinarily be in multiples of 6 inches. Letter heights should be rounded to the nearest inch that will best fit the plate used for legibility and appearance.

For use of educational plaques with symbol signs see section 2A-13.

2C-3 Placement of Warning Signs

Warning signs shall be erected in accordance with the general requirements for sign position as described in Section 2A-21 to 29.

Since warning signs are primarily for the benefit of the driver who is unacquainted with the road, it is very important that care be given to the placement of such signs. Warning signs should provide adequate time for the driver to perceive, identify, decide, and perform any necessary maneuver. This total time to perceive and complete a reaction to a sign is the sum of the times necessary for Perception, Identification/understanding, Emotion/decisionmaking, and Volition/execution of decision, and is here referred to as the PIEV time. The PIEV time can vary from about 3 seconds for general warning signs to 10 seconds for high driver judgment condition warning signs. Table II-1 lists suggested minimum sign placement distances that may be used for three conditions: II-4 (c)

* Available from GPO, see page ii.

Scan by Kittelson LLC

TABLE II-1—A Guide For Advance Warning Sign Placement Distance[1]

Posted or 85 percentile speed MPH	*Condition A high judgment needed [3] (10 secs. PIEV)*	*General warning signs[2]*					
		Condition B—Stop condition	*Condition C—Deceleration condition to listed advisory speed—MPH (or desired speed at condition)*				
		0	*10*	*20*	*30*	*40*	*50*
20	[5] 175	(4)	(4)				
25	250	(4)	[2] 100				
30	325	[5] 100	150	[5] 100			
35	400	150	200	175			
40	475	225	275	250	[5] 175		
45	550	300	350	300	250		
50	625	375	425	400	325	[5] 225	
55	700	450	500	475	400	300	
60	775	550	575	550	500	400	[5] 300

Typical Signs for the Listed Conditions in Table II-1; Condition A—Merge, Right Lane Ends, etc; Condition B—Cross Road, Stop Ahead, Signal Ahead, Ped-Xing, etc.; Condition C—Turn, Curve, Divided Road, Hill, Dip, etc.

1 Distances shown are for level roadways. Corrections should be made for grades. If 48-inch signs are used, the legibility distance may be increased to 200 feet. This would allow reducing the above distance by 75 feet.

2 In urban areas, a supplementary plate underneath the warning sign shonld be used specifying the distance to the condition if there is an in-between intersection which might confuse the motorist.

3 Distance provides for 3-second PIEV, 125 feet Sign Legibility Distance, Braking Distance for Condition B and Comfortable Braking Distance for condition C as indicated in *A Policy on Geometric Design of Rural Highways*, 1965, AASHTO, Figure VII-15B.

4 No suggested minimum distance provided. At these speeds, sign location depends on physical conditions at site.

5 Feet

Condition A—a higher driver judgment condition which requires the driver to use extra time in making and executing a decision because of a complex driving situation; i.e., lane changing, passing, or merging. Condition B—a condition in which the driver will likely be required to stop; and Condition C—a condition in which the driver will likely be required to decelerate to a specific speed. The table is provided as an aid for determining warning sign location. The values contained in the table are for guidance purposes and should be applied with engineering judgment. The placement of temporary warning signs used at highway construction and maintenance sites is covered in Part VI of this Manual and the suggested minimum sign placement distances given in Table II-1 may not apply to that group of signs. II-4 (c)

Other miscellaneous warning signs that advise of potential hazards not related to a specific location may be installed in the most appropriate locations since they are not covered in Table II-1. These include DEER CROSSING and SOFT SHOULDER signs. Minimum spacing between warning signs with different messages normally should be based on the PIEV times for driver comprehension and reaction.

The effectiveness of the placement of any warning sign should be tested periodically under both day and night conditions. Figure 2-5 (page 2A-16) shows typical installations of standard warning signs.

2C-4 Turn Sign (W1-1)

The Turn sign (W1-1R or 1L) is intended for use where engineering investigations of roadway, geometric, and operating conditions show the

Scan by Kittelson LLC

INTENTIONALLY LEFT BLANK

Scan by Kittelson LLC

recommended speed on a turn to be 30 MPH or less, and this recommended speed is equal to or less than the speed limit established by law or by regulation for that section of highway. Where a Turn sign is warranted, a Large Arrow sign (sec. 2C-9) may be used on the outside of the turn. Additional protection may be provided by use of the Advisory Speed plate (sec. 2C-35).

W1–1R
30" x 30"

W1–2R
30" x 30"

2C-5 Curve Sign (W1-2)

The Curve sign (W1-2R or 2L) is intended for use where engineering investigations of roadway, geometric, and operating conditions show the recommended speed on the curve to be in the range between 30 and 60 miles per hour and equal to or less than the speed limit established by law or by regulation for that section of highway. Additional protection may be provided by use of the Advisory Speed plate (sec. 2C-35).

2C-6 Reverse Turn Sign (W1-3)

The Reverse Turn sign is intended for use to mark two turns or a curve and a turn in opposite directions as defined in the warrants or Turn and Curve signs (secs. 2C-4 and 5) that are separated by a tangent of less than 600 feet. If the first turn is to the right, a Right Reverse Turn sign (W1-3R) shall be used and if the first turn is to the left, a Left Reverse Turn sign (W1-3L) shall be used.

W1–3R
30" x 30"

W1–4R
30" x 30"

Scan by Kittelson LLC

For additional protection the Advisory Speed plate (sec. 2C-35) may be used.

2C-7 Reverse Curve Sign (W1-4)

The Reverse Curve sign is intended for use to mark two curves in opposite directions, as defined in the warrants for curve signs (sec. 2C-5) that are separated by a tangent of less than 600 feet. If the first curve is to the right, a Right Reverse Curve sign (W1-4R) shall be used, and if the first curve is to the left, a Left Reverse Curve sign (W1-4L) shall be used.

For additional protection the Advisory Speed plate (sec. 2C-35) may be used.

2C-8 Winding Road Sign (W1-5)

The Winding Road sign is intended for use where there are three or more turns or curves, as defined in the warrants for Turn and Curve signs (secs. 2C-4 and 5), separated by tangent distances of less than 600 feet. II-29 (c)

If the Winding Road sign is used it shall be erected in advance of the first curve. Where the three or more turns or curves extend over a roadway length of 1 mile or more, the supplemental plaque (W7-3a, NEXT X MILES) may be installed below the W1-5 sign. II-29 (c)

Additional warning may be provided by the installation of road delineation markers (sec. 3D-4) and by use of the Advisory Speed plate (sec. 2C-35). Where there are fewer than five curves in succession, one or more Reverse Turn or Reverse Curve signs should be used in lieu of the Winding Road sign.

W1-5R
30" x 30"

2C-9 Large Arrow Sign (W1-6, W1-7)

The Large Arrow sign shall be a horizontal rectangle with a standard size of 48 × 24 inches, having a large arrow (W1-6) or a double head arrow (W1-7). It shall have a yellow background with symbol in black.

Scan by Kittelson LLC

2C–18 Merge Sign (W4–1)

A Merge sign is intended for use to warn motorists that merging movements may be encountered in advance of a point where two roadways converge and no turning conflict occurs.

The sign should be erected on the side of the major roadway on which merging traffic will be encountered and in such a position as not to obstruct the driver's view of vehicles on the entering roadway. Ordinarily the motorists on the minor or ramp roadway are aware that they may have to merge with other traffic, but an additional sign may be placed on the entering roadway as a reminder. Where two roadways of approximately equal importance converge, a sign should be placed on each roadway.

The Merge sign should not be used where two roadways converge and merging movements are not required.

The Merge sign should not be used in place of a Pavement Width Transition sign where lines of traffic moving on a single roadway must merge due to a reduction in the actual or usable pavement width (sec. 2C–19).

W4-1
30″ x 30″

W4-3
36″ x 36″

2C–18.1 Added Lane Sign (W4–3)

An Added Lane sign is intended for use in advance of a point where two roadways converge and merging movements are not required. This sign should be erected in advance of the point of convergence and should be visible from both roadways; otherwise, a sign should be placed on each roadway on the side of the roadway on which the other roadway converges.

Scan by Kittelson LLC

2C-19 Lane Reduction Transition Signs (W4-2) (W9-1) (W9-2)

A Lane Reduction Transition sign (W4-2) is intended for use to warn of the reduction in the number of traffic lanes in the direction of travel on a multilane highway. It is not justified in advance of the end of an acceleration lane. It may be used through maintenance or construction sites (sec. 6B-22).

On one-way roadways where the width of the median island will permit, two such signs can be placed facing approaching traffic, one on the right side and the other on the median island.

The LANE ENDS MERGE LEFT (RIGHT) sign (W9-2) is intended for use as a supplement to the Pavement Width Transition sign (W4-2). When used, this sign shall be placed in advance of the W4-2.

The RIGHT (LEFT) LANE ENDS sign (W9-1) is intended for use in advance of the Pavement Width Transition sign (W4-2) or the LANE ENDS MERGE LEFT (RIGHT) sign (W9-2) if it is used.

W4-2
36" x 36"

W9-1
36" x 36"

W9-2
36" x 36"

2C-20 Road Narrows Sign (W5-1)

A ROAD NARROWS sign is intended for use in advance of a transition on two-lane roads where the pavement width is reduced abruptly to a width such that two cars cannot pass safely without reducing speed. Additional protection may be provided by the use of delineators and object markers.

W5-1
36" x 36"

Scan by Kittelson LLC

2D-11 Design of Route Markers (M1-1 to 7)

The design of standard route markers is detailed in the Standard Highway Signs Booklet.* Other route marker designs shall be established by the authority having jurisdiction. Additional design and use requirements are as follows:

1. Interstate Route Markers for use on intersecting highways and roads approaching an interchange with an Interstate route shall consist of a cutout shield, with the route number in white letters on a blue background, the word INTERSTATE in white letters on a red background, and white border and may contain the State name in white letters on a blue background. A 24 × 24 inches size is prescribed to accommodate route numbers with one or two digits, and a 30 × 24 inches size for route numbers having three digits (see also sec. 2F-40).

Interstate
Route Marker
M1–1
24" x 24" (2-digit)
30" x 24" (3-digit)

Off-Interstate
Business Marker
M1–2
M1–3
24" x 24" (2-digit)
30" x 24" (3-digit)

SPUR

2. Off-Interstate Business Route Markers shall consist of a cutout shield carrying the number of the connecting Interstate route and the words BUSINESS (LOOP or SPUR). The legend and border shall be white on a green background, and the shield shall be of the same shape and dimensions as the Interstate Route Marker previously described. In no instance is the word INTERSTATE to appear on the Off-Interstate Business Route Marker. For improved contrast a white square panel may be placed between the green guide sign and the Off-Interstate Business Route Marker. This marker may be used on a major highway that is not a part of the Interstate System, but one that serves the business area of a city from interchanges on the System.

3. U.S. Route Markers shall consist of a rectangular 24 × 24 inch or 30 × 24 inch plate, with black numerals on a white shield surrounded by a black background, without a border. This marker shall be used on all

*Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

Scan by Kittelson LLC

U.S. routes and in connection with route marker assemblies on intersecting highways.

4. State Route Markers are to be designed by the individual State highway departments. However, the States are encouraged to adopt a uniform State Route Marker. This Marker should be a square plate of approximately the same size as the U.S. Route Marker, and containing comparable the same size black numerals on a white area surrounded by a black background without a border. The shape of the white area is to be circular in the absence of any determination to the contrary by the individual states concerned.

5. Wherever County road authorities elect to establish and identify a special system of important County roads, County road identification markers are to be designed and used as specified in the publication "A Proposal for a Uniform County Route Marker Program on a National Scale."* The Uniform County Route Marker shall be a pentagonal shape and shall consist of a reflectorized yellow legend (County name, route letter and number) and border on a reflectorized blue background. County Route Markers displaying two digits or the equivalent (letter and numeral or two letters) shall have a minimum size 18 × 18 inches; those carrying three digits or the equivalent shall have a minimum size of 24 × 24 inches. When used with other route markers in common assemblies the County Route Marker should be of a size compatible with that of the other route markers. For improved contrast a yellow square panel may be placed between the green guide sign and the County Route Marker.

U.S.
Route Marker
M1-4
24" x 24" (2-digit)
30" x 24" (3-digit)

County
Route Marker
M1-5
24" x 24"

6. Route markers for park and forest roads are to be designed with adequate distinctiveness and legibility and of a size compatible with other route markers used in common assemblies.

Route markers may be proportionally enlarged to any required size where greater legibility is needed. Where U.S. or State Route Markers

* Available from the National Association of Counties, Washington, D.C. 20006.

Scan by Kittelson LLC

The standard installation for Weigh Stations shall include three basic signs:

1. Advance sign (D8–1)
2. Exit Direction sign (D8–2)
3. Gore sign (D8–3)

The location of these signs is shown in figure 2–8. Where State law requires a regulatory sign in advance of the Weigh Station, a fourth sign (sec. 2B–42) may be located following the Advance sign. Design details for these signs are included in the Standard Highway Signs booklet.*

The Exit Direction sign (D8–2) or the Advance sign (D8–1) should display, either within the sign border or on a supplemental panel, the changeable message OPEN or CLOSED. Remote control of the changeable message is recommended, but provision may be made for changing the message manually.

2D–46 General Service Signs (D9–1 to 12) | II-2 (c)

On conventional highways commercial services such as gas, food and lodging are generally within sight and available to the traveler at reasonably frequent intervals along the route. Consequently, there is not expected to be much need on this class of roads for special signs calling attention to these services. Moreover, it is assumed that service signing will not be required in urban areas except for hospitals, tourist information centers and camping.

It is quite likely, however, that general service signs will be desirable or necessary where such services are infrequent, and are to be found only on an intersecting highway or crossroad. Under such conditions, States that elect to provide service signing should establish a statewide policy or warrant for its use and criteria for the availability of services, based on national guidelines. Local jurisdictions responsible for such signing should follow the State policy for the sake of uniformity.

General service signs, if used at intersections, shall carry legends for one or more of the following services: Food, Gas, Lodging, Camping, Phone, Hospital, Diesel, or Tourist Information, along with a directional message, The service legends may be either symbols or word messages, but the intermixing of symbols and word messages on one sign shall not be permitted. Formats for displaying different combinations of these services are presented in section 2F–33. | II-2 (c)

The International Symbol of Access for the Handicapped Sign (D9–6) may be used beneath General Service signs where paved ramps and restroom facilities accessible to, and usable by, the physicaly handicapped are provided.

Where the distance to the next point at which services are available is 10 miles or more, a sign NEXT SERVICES (12) MILES may be used as a separate panel mounted under the General Services sign.

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590.

Scan by Kittelson LLC

D9-1
24" x 24"

D9-2
24" x 24"

D9-3
24" x 24"

D9-3a
24" x 24"

D9-6
24" x 24"

D9-8
24" x 24"

D9-7
24" x 24"

D9-9
24" x 24"

D9-10
24" x 24"

D9-11
24" x 24"

D9-12
24" x 24"

The Recreational Vehicle Sanitary Station sign (D9-12) may be used as needed to indicate the availability of facilities designed for the use of dumping wastes from recreational vehicle holding tanks.

In advance of roadside turnouts or rest areas, a Trash Receptacle Symbol sign (D9-4) may be placed provided it does not compete with other more important regulatory, warning, and directional signs.

A Channel 9 Monitored sign (D12-3) may be installed as needed. Only official government agencies or their designee may be shown as the monitoring agency on the sign. (see sec. 2F-37). II-12 (c)

Scan by Kittelson LLC

All service signs, and supplemental panels, shall have reflectorized white letters, symbols and border on a reflectorized or opaque blue background and are to be erected at a suitable distance in advance of the turnoff point or intersecting highway.

2D-47 Mileposts (D10-1 to 3)

To assist the driver in estimating his progress, to provide a means for identifying the location of emergency incidents, and to aid in highway maintenance and servicing, mileposts may be erected along any section of a numbered highway route. Zero distance should begin at the south and west state lines and at junctions where routes begin.

The distance numbering shall be continuous for each route within a State, except where overlaps occur. With overlapped routes, continuity shall be established for only one of the routes. On the route without milepost continuity, the first milepost beyond the overlap should indicate the total distance traveled on the route so that a motorist may have a means of correlating his travel distance between mileposts with that shown on his odometer.

Milepost signs shall be vertical panels with 6-inch white numerals, a border and the legend MILE in 4-inch letters on a green background and shall be reflectorized. Milepost signs may be placed up to 30 feet from the edge of pavement. Milepost signs located in line with delineator posts shall have the bottom of the sign at the same height as the delineator (see sec. 3D-5).

Small size 6 × 9 inch mileposts with 4-inch numerals, without the legend MILE, may be used on low volume, low speed, rural unnumbered roads in lieu of the D-10 series.

For divided highways, distance measurement shall be made on northbound and eastbound roadways. The mileposts for southbound and westbound roadways shall be set at locations directly opposite. When a milepost cannot be erected in its correct location, it may be moved in either direction as much as 50 feet. If it cannot be placed within 50 feet of its correct location, it should be omitted.

D10-1
10" x 18"

D10-2
10" x 27"

D10-3
10" x 36"

Scan by Kittelson LLC

While mileposts serve as a guide for motorists, they also provide a means of identifying traffic accident locations and sections of highway for maintenance or other purposes. To further enhance the usefulness of this system, delineators may be spaced at 1/10 or 1/20 of a mile, and can be marked in fractions of a mile by stencil on the back of the delineator or post or by a small plate on the delineator post. This plate shall not be considered as a milepost, therefore will not be green and white in color. The numeral shall be small and preferably on the back side of the post or delineator.

2D-48 Traffic Signal Speed Sign (I1-1)

The Traffic Signal Speed sign, reading SIGNALS SET FOR (25) M.P.H., may be used to indicate a section of highway on which the traffic control signals are coordinated into a pretimed progressive system and timed for a specified speed at all hours during which they are operated on a stop-and-go basis. Where used, the sign should be mounted on, or as near as possible to, each signal face where the timed speed changes, and at intervals of several blocks throughout any section where the timed speed remains constant.

This sign shall be a minimum of 12 × 18 inches with the longer dimension vertical. It shall always have a white reflectorized message and border on a green reflectorized background.

I1-1
12" x 18"

2D-49 General Information Signs (I Series)

Of interest to the traveler, though not directly necessary for guidance, are numerous kinds of information that may properly be conveyed by information signs. They include such items as State lines, city limits, and other political boundaries, time zones, stream names, elevations, landmarks and

Scan by Kittelson LLC

number, and the corresponding distances to the nearest 1/4 mile should be shown below. The sign should be located in advance of the first advance guide sign for the first interchange within the community. If interchanges are not conveniently identifiable or if there are more than three interchanges as to be identified the Next (X) Exits Area sign (E9) may be used.

2E-36 Next (X) Exits Area Sign (fig. 2-20)

Expressways may pass through "historical" or "recreational" regions, or urban areas served by a succession of several interchanges. Such regions or areas may be indicated by a special sign located in advance of the advance guide sign or signs for the first interchange. The sign legend should identify the region or area followed by the words NEXT (X) EXITS.

E9

Figure 2-20. Next (x) exits area sign.

2E-37 Signing for General Motorist Services (fig. 2-21)

On rural sections of expressways where general motorist services are infrequent, service signing may be needed. In such cases, the provisions of section 2D-46 will apply, except that signs should be suitably enlarged. Letter and numeral sizes are shown in table II-1 (page 2E-4). Approved symbols may be used as an alternate to word messages whenever motorist service signs are used but intermixing of symbols and word legends shall not be permitted.

The interchange exit number may be displayed atop the main panel (see fig. 2-43, page 2F-35). The action message line may then show the distance to the exit.

Special signs or other displays may be erected in safety rest areas, scenic overlooks, roadside turnouts and similar areas, for providing mo-

Scan by Kittelson LLC

Figure 2-21. Signing for General Motorist Services.

torists with specific services information. National criteria for such postings are given in the Code of Federal Regulations, 23 CFR 655C.*

2E-38 Rest and Scenic Areas

Signing for safety rest areas and for scenic areas should conform to the provisions previously set forth in sections 2D-42 and 2D-43. However, the signs should be suitably enlarged for expressway application. To provide the motorist with information on the location of succeeding rest areas a sign with the word message NEXT REST AREA XX MILES may be installed independently or as a supplemental panel mounted below one of the advance rest area guide signs. The sign or panel shall have reflectorized white letters and border on a blue background. Letter and numeral sizes are shown in Table II-1 (page 2E-4). II-36 (c)

2E-39 Recreational and Cultural Interest Area Signs

Recreational and cultural interest area signs of the type described previously in section 2D-44 may have application on expressway facilities. Where such signs are used, the provisions of the section should be followed with suitable enlargement of the signs for expressway conditions.

2E-40 Milepost Markers

Milepost markers will be required on expressway facilities which are located on a route where there is milepost continuity. In such cases, the provisions of section 2F-39 will apply.

---

* National Standards for Signs Giving Specific Information in the Interest of the Traveling Public, FHPM 6-8-3-8.

Scan by Kittelson LLC

2E–41 Wrong-Way Traffic Control (figs. 2–22a and 2–22b)

To help prevent wrong-way usage, efforts shall be made to identify and correct highway ramp terminals.

On interchange exit ramps where the ramp intersects a crossroad in such a manner that wrong-way entry could be made:

1. ONE-WAY signs shall be placed where the exit ramp intersects the crossroad. Turn prohibition signs may be placed, especially on two-lane rural crossroads, appropriately in advance of the ramp intersection to supplement the ONE-WAY sign.

2. DO NOT ENTER signs shall be conspicuously placed near the end of the exit ramp in positions appropriate for full view of a driver starting to enter wrongly.

3. At least one WRONG-WAY sign shall be placed on the exit ramp. Additional WRONG-WAY signs may be used where the ramp geometrics justify their installations.

4. On two-lane paved crossroads at interchanges, double solid yellow lines should be used as a centerline for an adequate distance on both sides approaching the ramp intersections.

5. In each lane at an exit ramp, one or more pavement marking arrows should be placed near the crossroad terminal to supplement wrong way signing at locations where wrong way usage occurs or there is the likelihood of wrong way movement. These markings, which should be clearly in sight of a wrong way driver, may consist of traffic paint, thermoplastic material, bidirectional red and white raised pavement markers, or other units that show red to wrong way drivers and white to other drivers. III-16 (c)

6. Symbol arrow pavement markings may be placed on the crossroad at appropriate locations near the ramp junction to indicate the permissive direction of flow.

7. Guide signs may be used on entrance ramps near the crossroad to inform drivers of the correct "Freeway Entrance."

On interchange entrance ramps where the ramp merges with the through roadway:

1. Where the design of an interchange does not clearly make evident the direction of traffic on the separate roadways or ramps, a ONE-WAY sign visible to traffic on the entrance ramp and through roadway should be placed on each side of the through roadway opposite to the entrance ramp. A No Left Turn sign also may be placed along the right-hand side of the ramp just in advance of the entrance ramp terminal.

2. Arrow pavement markings may be placed at appropriate locations on the entrance ramp and major road through lanes to indicate the permissive direction of traffic flow.

At locations which are determined to have a special need, other standard warning or prohibitive methods and devices may be used as a deterrent to the wrong-way movement.

Scan by Kittelson LLC

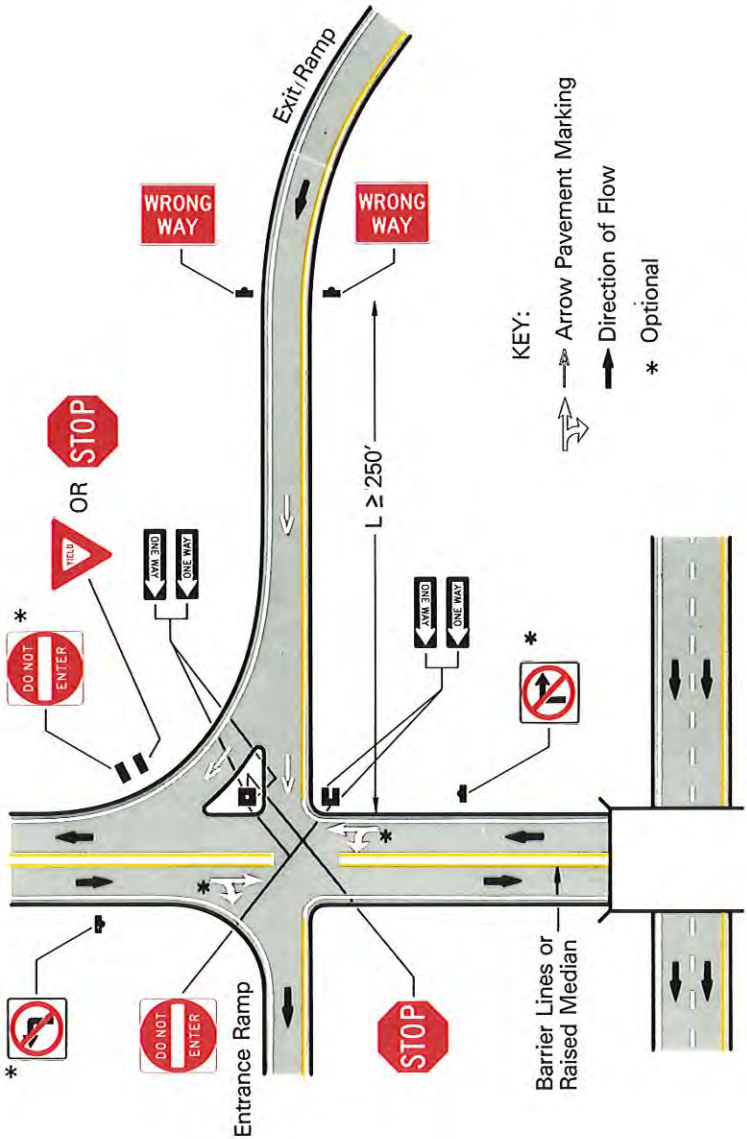


Figure 2-22a. Regulatory signing, delineation and arrow markings at exit ramp terminals to deter wrong-way entry (Modify as appropriate for 4-lane crossroads)

Scan by Kittelson LLC

Figure 2-22b. Regulatory signing and arrow markings at entrance ramp terminals where design does not clearly indicate the direction of flow

Scan by Kittelson LLC

2E-42 Miscellaneous Guide Signs

Miscellaneous guide signs, such as those pointing out geographical features like rivers, summits, and political boundaries (sec. 2D-49) may be used on expressways if they do not interfere with signing for interchanges or other critical points. If they are to be of value to the expressway traveler they should be consistent with other expressway signs in design and legibility.

2E-43 Weigh Station Signing

Where Weigh Station signing is applicable on an expressway route the provisions of section 2D-45 should be followed except that the distance to the exit direction sign should be 1500 feet minimum. Sign sizes and legend for expressways are contained in the Standard Highway Signs booklet.*

2E-44 Special Signing on Expressway Approaches and Connecting Roadways

The identification of entrances to expressways from roads of lesser importance should be given adequate attention. Conventional signing on the approach roads, as prescribed in Part II-D, may in some cases be ineffective for some of the more critical interchanges. Under such conditions the expressway signing standards may have to be extended to the approach roads.

Signing for frontage roads need not be to the same standard as is used on the through traffic roadways of the expressway, but otherwise should be consistent with requirements for roadways of this class. Good judgment and careful attention to details of such signs and their locations must be exercised in the vicinity of ramp terminals to avoid giving drivers confusing or conflicting information, or creating sight obstructions.

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

Scan by Kittelson LLC

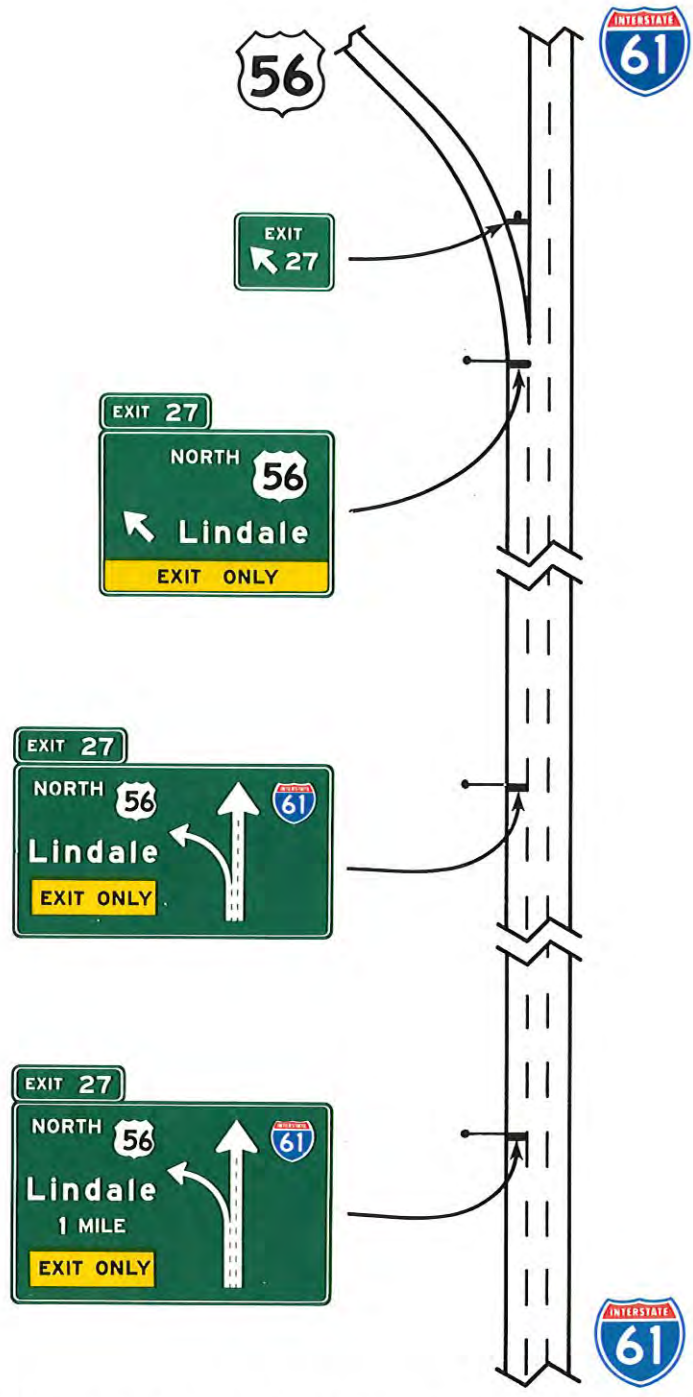


Figure 2–35. EXIT ONLY on left with diagrammatic (Left-hand interchange lane drop).

Scan by Kittelson LLC

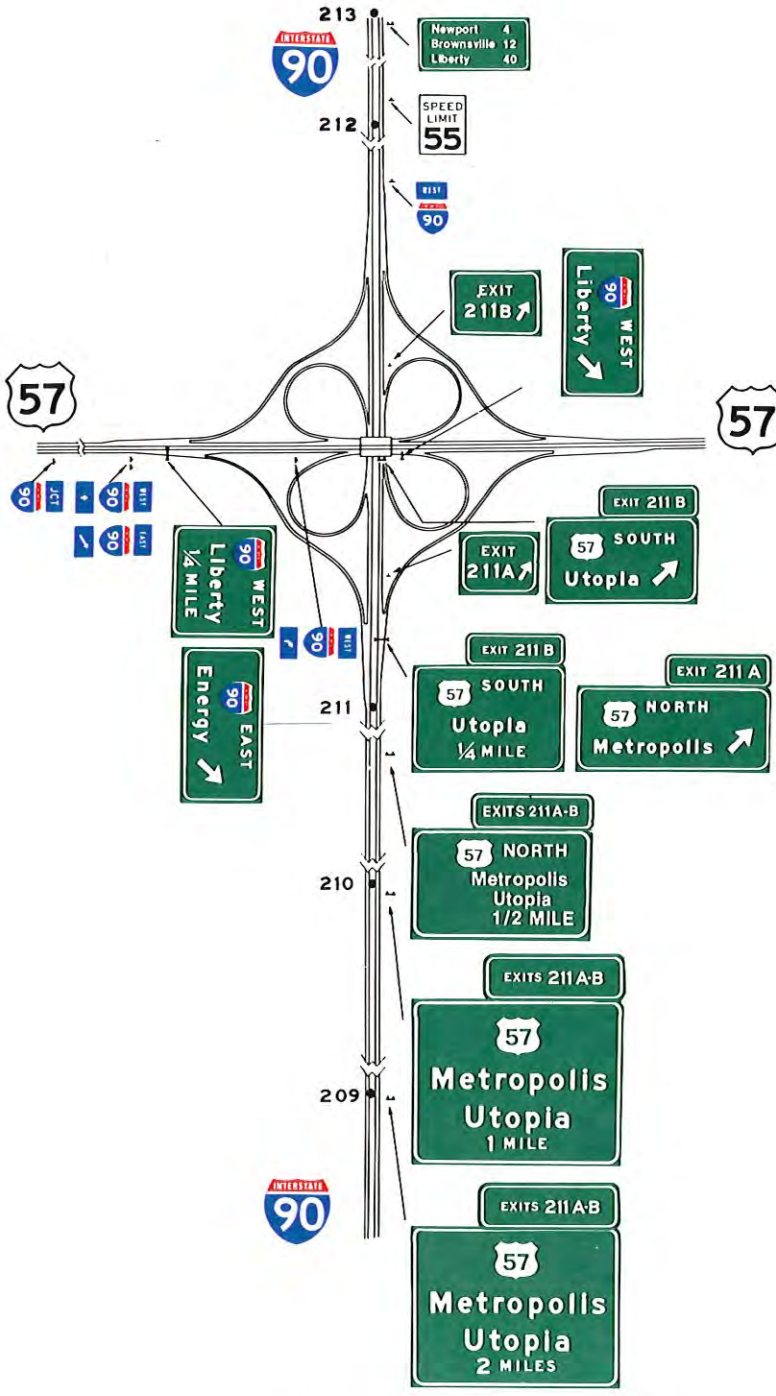


Figure 2-36. Cloverleaf interchanges.

Scan by Kittelson LLC

At rural interchange areas where limited motorist services are available and where it is unlikely that additional services will be provided within the near future, a panel having one to three services (words or symbols) may be appended to ground mounted interchange guide signs. Should additional services become available at such locations in the future, the appended sign panel shall be removed and replaced with an independently mounted motorist service sign as described above. When sign panels are appended, the requirements of sections 2A-23 and 2F-17 shall apply.

A separate telephone service sign (sec. 2D-46) may be erected when telephone facilities are located adjacent to the freeway at places where telephones would not normally be expected.

The Recreational Vehicle Sanitary Station sign (D9-12) may be used as needed to indicate the availability of facilities designed for the use of dumping wastes from recreational vehicle holding tanks.

In some locations, signs may be useful to indicate that services are not available.

2F-34 Specific Services Information

In addition to the general motorist service signs, State policy may precribe the use of special panels or displays to provide motorists with specific services information, according to the national criteria for such postings given in the Code of Federal Regulation 23 CFR 655C.*

Specific information signs should be located so as to be readable from the main traveled way approaching an interchange, giving the name, brand or trademark of the services available at that interchange. When services providing gas also provide diesel fuel the business logo may include a suitable designation of that additional service. II-2 (c)

Combination type specific service information signs may be used in remote rural areas of the Interstate System in accordance with the following criteria:

1. The combination of specific service signing using business logos will include GAS, FOOD, LODGING, and CAMPING. Only two services shall appear on a combination sign. A maximum of two logos may appear below each respective service. If all four services are available, GAS and FOOD should be combined on one sign, and LODGING and CAMPING should be combined on the other sign.
2. When the number of business facilities at a rural interchange are increased to more than two for one or more services, existing combination service signing must be removed and replaced with sign panels dedicated to each service.
3. Installation distances in advance of interchange exits should follow established standard requirements for specific service signing.

If additional services are anticipated for any of the services in the near future, combined specific service signs should not be used.

* National Standards for Specific Information Signs, FHPM 6-8-3-8.

Scan by Kittelson LLC

2F-35 Rest and Scenic Area Signs (fig. 2-44)

On the approach to rest areas, an advance guide sign shall be placed one mile or two miles in advance of the rest area. If the rest area has facilities for the physically handicapped (sec. 2D-46), the International Symbol of Access for the Handicapped Sign (D9-6) may be placed with or beneath the advance rest area sign. Between the advance guide sign and the gore of the rest area exit, there may be sign reading REST AREA which shall carry either an arrow or the words NEXT RIGHT as a part of the message.

At the rest area exit gore, there shall be a sign with a message REST AREA together with an arrow indicating the appropriate turn as shown in figure 2-44. A roadside area that does not contain restroom/toilets should be signed to indicate the major motorist service provided. An area with only parking would be signed PARKING AREA. An area with picnic tables and parking would be signed PICNIC AREA. All signs for rest areas shall have reflectorized white letters, symbols, and borders on a blue background.

To provide the motorist with information on the location of succeeding rest areas a sign with the word message NEXT REST AREA XX MILES may be installed independently or as a supplemental panel mounted below one of the advance rest area guide signs. The supplemental panel may be used with one of the advance guide signs for rest areas that have tourist information and welcome centers. Before a supplemental panel is installed with tourist information or welcome center signs, a study should be conducted to make sure the additional information will not overload the motorist on this section of roadway. II-36 (c)

Rest areas that have tourist information and welcome centers should be signed as discussed in section 2F-36.

Figure 2-44. Freeway rest area gore sign.

Scan by Kittelson LLC

The criteria for signing for radio-weather information is as follows:

1. Radio-Weather Information signs shall have a white legend and border on a blue background.
2. Only the numerical indication of the radio frequency shall be used to identify a station broadcasting weather travel information.
3. A maximum of four frequencies may be shown on each sign.
4. The radio station should have a signal strength to adequately serve 70 miles along the roadway.
5. Signs should be spaced according to needs, but ordinarily not closer than 30 miles apart for each direction of travel.
6. A particular radio frequency may be shown a maximum of twice in one direction along the main line.
7. Only radio stations whose signal will be of value to the traveler and who agree to carry the two items below are to be identified on weather information signs.
   a. Periodic weather warnings at no more than 15 minute intervals during periods of adverse weather.
   b. Road condition information affecting the roadway being traveled once every half hour when required, supplied by an official agency having jurisdiction.
8. The stations to be included on the signs should be selected in cooperation with the association(s) representing major broadcasting stations in the area to provide (1) maximum coverage to all motorists on both AM and FM frequencies and (2) consideration of 24 hours a day, 7 days a week broadcast capability.
9. Additional criteria may be developed by individual states.
10. If a station to be considered operates only on a seasonal basis, its signs shall be removed or covered during the off-season.

A Channel 9 Monitored sign (D12-3) may be installed as needed. Only official government agencies or their designee may be shown as the monitoring agency on the sign. This sign shall have reflectorized white letters and border on a reflectorized blue background. II-12 (c)

For roadway rest area locations a smaller sign using a greater number of radio frequencies but of the same general design may be used. Rest area signs shall not be erected as to be visible from the main roadway.

D12-1

D12-2

D12-3

2F-37.1 Carpool Information Signing

In urban areas having carpool matching services it is considered in the public interest to permit the use of carpool information signs (D12-2)

Scan by Kittelson LLC

not only adjacent to preferential lanes but along any urban highway. As this is an information sign related to motorist services it should have a white legend on a blue background as defined in section 2A-11.

2F-38 Weigh Station

Weigh station signing on freeways shall be the same as that specified in section 2D-45, except for lettering size and the advance posting distance for the Exit Direction sign, which shall be located 1500 feet in advance of the gore. The recommended sign layout for freeway applications are shown in the Standard Highway Signs booklet.*

2F-39 Milepost Markers

Milepost signs shall be placed on all freeway facilities and shall conform to the general provisions for mileposts contained in section 2D-47. Markers shall contain 10-inch white numerals on 12-inch wide vertical green panels with a white border. Panels shall be 24, 36, or 48 inches in length for one, two, or three digits, respectively, and contain the word MILE. Milepost markers may be placed up to 30 feet from the edge of the pavement. Milepost markers located in line with delineator posts shall have the bottom of the marker at the same height as the delineator. The distance numbering shall be continuous for each route within any State except where overlaps occur. With overlapped routes, continuity shall be established for one of the routes which should also have continuity in the interchange exit numbering (sec. 2F-19). On the route without milepost continuity, the first marker beyond the overlap should be such as to indicate the total distance traveled on the route so that a motorist may have a means of correlating his travel distance between mileposts with that shown on his odometer.

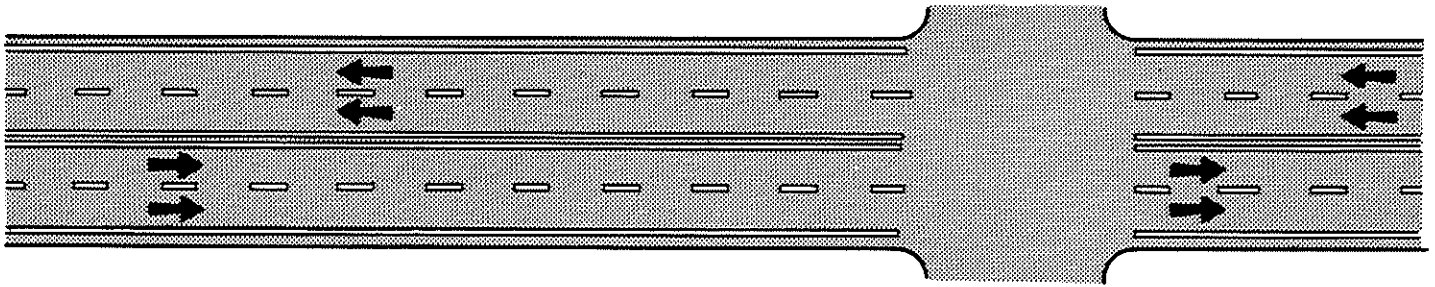
2F-40 Route Markers and Trailblazers (figs. 2-45, 2-46)

As in the case of expressways (sec. 2E-20), route markers on freeways will ordinarily be incorporated as shields or other distinctive shapes into large directional guide signs. The use of independent markers on freeways will be limited primarily to route confirmation assemblies as shown in figures 2-36, 2-37, and 2-40.

The official route marker for the Interstate Highway System is the red, white and blue reflectorized distinctive shield adopted by AASHTO on August 14, 1957. Where the Interstate shield is displayed in an assembly or on the face of a guide sign with U.S. or State route markers, the Interstate numeral should be at least equal in size to these other route markers. The Interstate shield shall be fully reflectorized and shall conform to the standards set forth in the Standard Highway Signs booklet.*

* Available from the Federal Highway Administration (HTO-20), Washington, D.C. 20590

a — Typical multi-lane, two-way marking.



b — Typical multi-lane, two way marking with single lane left turn channelization.

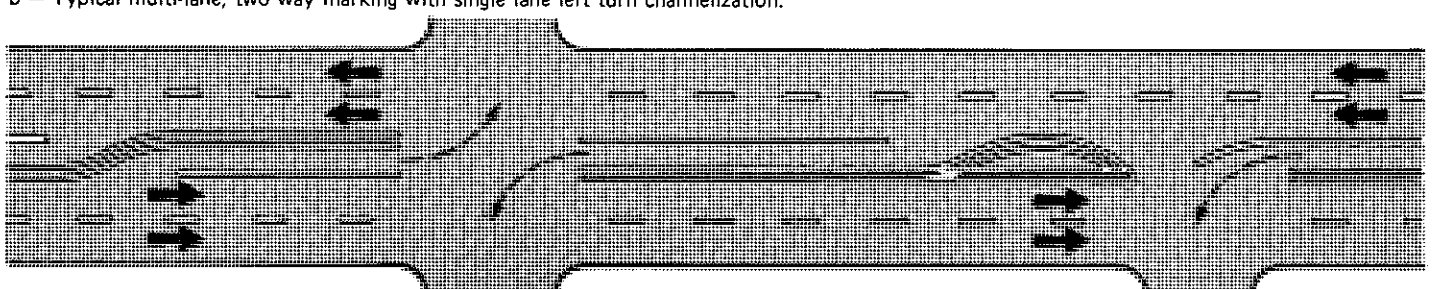
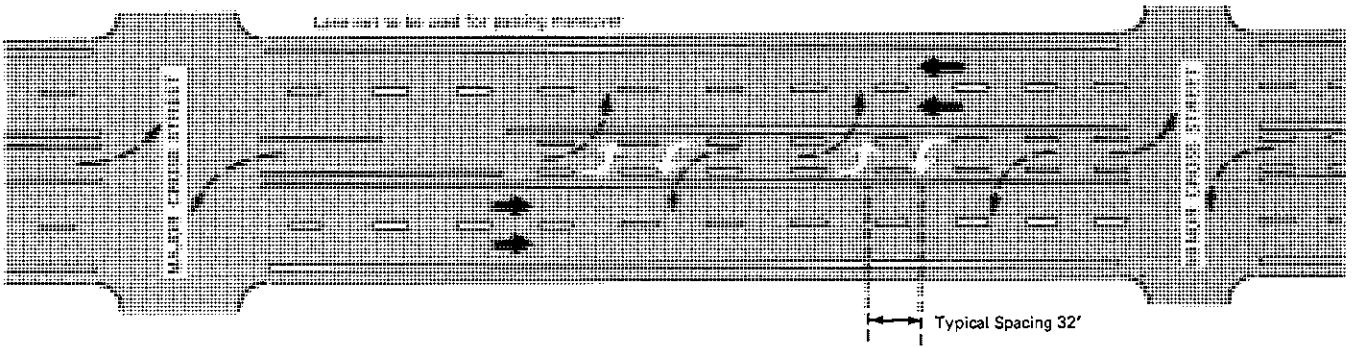


Figure 3-4. Typical multilane, two-way marking applications.

Scan by Kittelson LLC

a – Typical multi-lane, two-way marking with single lane, two-way left turn channelization.



b – Typical multi-lane, two-way marking with restricted lanes.

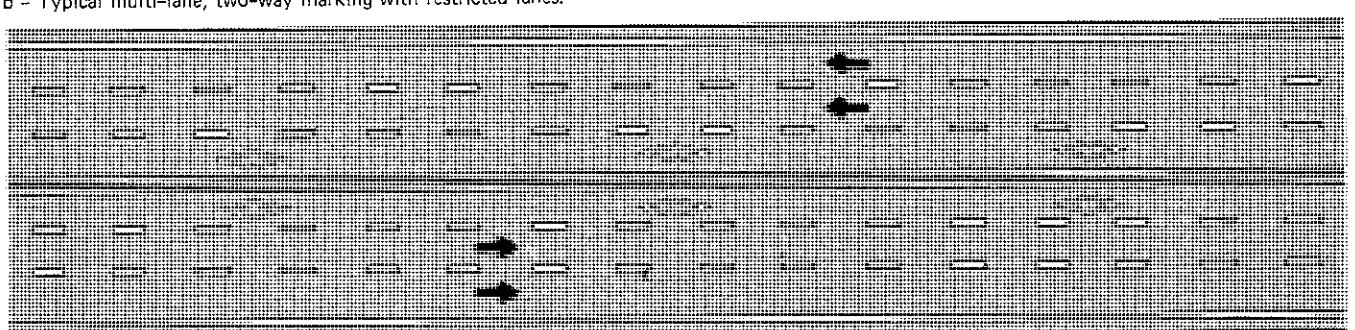


Figure 3-5. Typical multilane, two-way marking applications.

Scan by Kittelson LLC

Scan by Kittelson LLC

C. OBJECT MARKINGS

3C-1 Object Marker Design

Object markers are used to mark obstructions within or adjacent to the roadway. When used, these markers shall consist of an arrangement of one or more of the following designs:

Type 1—Either a marker consisting of nine yellow reflectors, each with a minimum dimension of approximately 3″, mounted symmetrically on an 18″ yellow or black diamond panel; or an all yellow reflective diamond panel of the same size. Type 1 markers may be larger if conditions warrant.

Type 2—Either a marker consisting of three yellow reflectors, each with a minimum dimension of approximately 3″, arranged either horizontally or vertically; or an all yellow reflective panel, 6″ × 12″. Type 2 markers may be larger if conditions warrant.

Type 3—Striped marker consisting of a vertical rectangle approximately 1 foot by 3 feet in size with alternating black and reflectorized yellow stripes sloping downward at an angle of 45° toward the side of the obstruction on which traffic is to pass. The minimum width of the yellow stripe shall be 3 inches. A better appearance can be achieved if the black stripes are wider than the yellow stripes. III-7 (c)

Type 3 object markers with stripes which begin at the upper right side and slope downward to the lower left side are to be designated as "right" object markers (OM-3R). Object markers with stripes which begin at the upper left side and slope downward to the lower right side are to be designated as "left" object markers (OM-3L).

3C-2 Objects in the Roadway

Obstructions within the roadway, shall be marked with a Type 1 or Type 3 object marker.

For additional emphasis, a large surface such as a bridge pier may be painted with diagonal stripes, 12 inches or greater in width, similar in design to the Type 3 object marker. The alternating black and reflectorized yellow stripes shall be sloped down at an angle of 45° toward the side of the obstruction which traffic is to pass. The minimum mounting height shall be 4 feet. III-7 (c)

Appropriate signs (secs. 2B-25 and 2C-33) directing traffic to one or both sides of the obstruction may be used in lieu of the object marker. In addition to markings on the face of an obstruction in the roadway, warning of approach to the obstruction shall be given by appropriate pavement markings (sec. 3B-13).

Scan by Kittelson LLC

Where the vertical clearance of an overhead structure exceeds the maximum legal height of vehicle by less than one foot, the clearance in feet and inches should be clearly marked on the structure (sec. 2C-34).

3C-3 Objects Adjacent to the Roadway

Objects not actually in the roadway may be so close to the edge of the road that they need a marker. These include underpass piers, bridge abutments, handrails and culvert headwalls. In some cases there may not be a physical object involved, but other roadside conditions such as narrow shoulder drop-offs, gores, small islands and abrupt changes in the roadway alignment may make it undesirable for a driver to leave the roadway. Type 2 or 3 object markers are intended for use at such locations. The inside edge of the marker shall be in line with the inner edge of the obstruction.

Standard warning signs (Part II-C) should also be used where applicable. Typical applications of markers for roadside obstructions are shown in figure 3-20.

3C-4 End of Roadway

When it is determined that markers should be placed at the end of a roadway where there is no alternate vehicular path, either a marker consisting of nine red reflectors, each with a minimum dimension of approximately 3″, mounted symmetrically on an 18-inch diamond, red or black panel; or an 18-inch diamond reflectorized red panel shall be used. More than one marker or a larger marker may be used at the end of the roadway where conditions warrant. The minimum mounting height of this marker shall be four feet. Appropriate advance warning signs should be used.

Scan by Kittelson LLC

Typical Type 1 Object Markers

18″x18″ 18″x18″ 18″x18″

Typical Type 2 Object Markers

6″x12″ 6″x12″ 12″x6″ 12″x6″

Typical Type 3 Object Markers

OM-3L
12″x36″

OM-3R
12″x36″

Typical End of Road Markers

18″x18″ 18″x18″ 18″x18″

Scan by Kittelson LLC

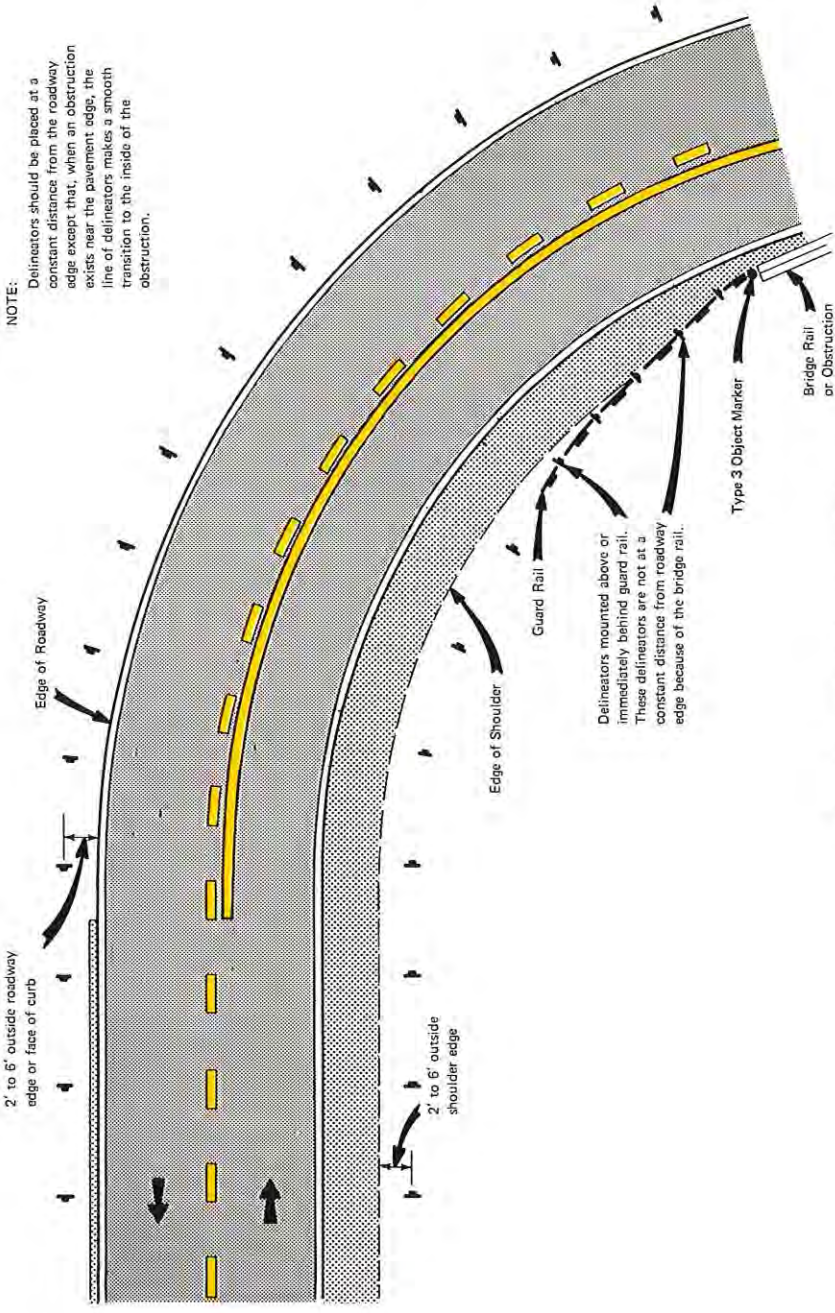

NOTE:
Delineators should be placed at a constant distance from the roadway edge except that, when an obstruction exists near the pavement edge, the line of delineators makes a smooth transition to the inside of the obstruction.
Edge of Roadway
2' to 6' outside roadway edge or face of curb
2' to 6' outside shoulder edge
Edge of Shoulder
Guard Rail
Delineators mounted above or immediately behind guard rail. These delineators are not at a constant distance from roadway edge because of the bridge rail.
Type 3 Object Marker
Bridge Rail or Obstruction

Figure 3-20. Typical delineator installation.

Scan by Kittelson LLC

the signal faces required by paragraph (1) above shall be located between two lines intersecting with the center of the approach lanes at the stop line, one making an angle of approximately 20 degrees to the right of the center of the approach extended, and the other making an angle of approximately 20 degrees to the left of the center of the approach extended (fig. 4–2). This requirement is to be applied simultaneously with paragraph (5) above.

7. Near-side signals should be located as near as practicable to the stop line.

8. Where a signal face controls a specific lane or lanes of approach, its transverse position should be unmistakably in line with the path of that movement.

9. Required signal faces for any one approach shall be not less than 8 feet apart measured horizontally between centers of faces.

10. When the nearest signal face is more than 120 feet and less than 150 feet beyond the stop line, either 12-inch signal indications or a near-side signal indication shall be used. When the nearest signal face is 150 feet or more beyond the stop line, a supplemental near-side signal face shall be used. IV-21 (c)

11. A signal face mounted on a span wire or mast arm should be located as near as practicable to the line of the driver's normal view.

12. Supplemental signal faces should be used when an engineering study has shown that they are needed to achieve both advance and immediate intersection visibility. When used, they should be located to provide optimum visibility for the movement to be controlled. The following limitations apply:

(a) Left turn arrows shall not be used in near-right faces.

(b) Right turn arrows shall not be used in far-left faces. A far-side median mount signal shall be considered as a far-left signal for this application.

At signalized mid-block crosswalks, there should be at least one signal face over the traveled roadway for each approach. In other respects, a traffic control signal at a mid-block location shall meet the requirements set forth herein.

The transverse location of a signal face, shall, if mounted on the top of a post or on a short bracket from it, conform with section 4B–14.

Supplementary pedestrian signals shall be used where warranted as provided in section 4D–3.

4B–13 Height of Signal Faces

The bottom of the housing of a signal face, not mounted over a roadway, shall not be less than 8 feet nor more than 15 feet above the sidewalk or, if none, above the pavement grade at the center of the highway, except that the bottom of center median, near-side signal faces may be mounted at a minimum of 4½ feet above the median island grade.

The bottom of the housing of a signal face suspended over a roadway shall not be less than 15 feet nor more than 19 feet above the pavement grade at the center of the roadway.

Scan by Kittelson LLC

Within the above limits, optimum visibility and adequate clearance should be the guiding considerations in deciding signal height. Grades on approaching streets may be important factors, and should be considered in determining the most appropriate height.

4B-14 Transverse Location of Traffic Signal Supports and Controller Cabinets

In the placement of signal supports, primary consideration shall be given to ensuring the proper visibility of signal faces as described in sections 4B-12 and 13. However, in the interest of safety, signal supports and controller cabinets should be placed as far as practicable from the edge of the traveled way without adversely affecting signal visibility.

Supports for post-mounted signal heads at the side of a street with curbs shall have a horizontal clearance of not less than 2 feet from the face of a vertical curb. Where there is no curb, supports for post-mounted signal heads shall have a horizontal clearance of not less than 2 feet from the edge of a shoulder, within the limits of normal vertical clearance. A signal support should not obstruct a crosswalk.

No part of a concrete base for a signal support should extend more than 4 inches above the ground level at any point, except that this limitation does not apply to the concrete base for a rigid (non-breakaway) support.

On medians, the above minimum clearances for signal supports should be obtained where practicable. Any supports which cannot be located with the required clearances should be of the breakaway type or should be guarded if at all practicable.

4B-15 Vehicle Change Interval

A yellow vehicle change interval shall be used, where applicable, following each CIRCULAR GREEN or GREEN ARROW interval, as discussed in section 4B-6 (2) and (4). In no case shall a CIRCULAR YELLOW indication be displayed in conjunction with the change from CIRCULAR RED to CIRCULAR GREEN.

The exclusive function of the steady yellow interval shall be to warn traffic of an impending change in the right-of-way assignment.

Yellow vehicle change intervals should have a range of approximately 3 to 6 seconds. Generally the longer intervals are appropriate to higher approach speeds.

The yellow vehicle change interval may be followed by a short all-way red clearance interval, of sufficient duration to permit the intersection to clear before cross traffic is released.

A clearance interval shall be provided between the termination of a GREEN ARROW indication and the showing of a green indication to any conflicting traffic movement.

Scan by Kittelson LLC

B. SIGNS

General

6B-1 Design of Signs

Street or highway construction and maintenance signs fall into the same three major categories as do other traffic signs; namely, Regulatory signs, Warning signs, and Guide signs. Many signs normally used elsewhere will also find application for signing construction and maintenance operations. Special construction and maintenance signs follow the basic standards for all highways signs as to shape. Warning signs in construction areas shall have a black legend on an orange background. Existing yellow warning signs already in place within these areas may remain in use. Color for other signs shall follow the standard for all highway signs.

The use of stripes (other than the standard border) or other geometric patterns or contrasting colors on or around any sign in an attempt to make it more conspicuous, distracts attention from the message, and defeats the purpose of maintaining uniformity and simplicity of design. Such practice is contrary to standards and is accordingly disapproved. However, the use of standard orange flags or yellow flashing warning lights in conjunction with signs is permitted, so long as they do not interfere with a clear view of the sign face.

The dimensions of signs shown herein are for standard sizes, which may be increased wherever necessary for greater legibility or emphasis. On secondary highways and city streets smaller signs may be used if authorized by lawful authority. Deviations from standard sizes as prescribed herein shall be in six-inch increments.

Standard sign sizes and colors are shown in the illustrations of the individual signs rather than in detailed specifications in the text. Where the orange background is specified and reflectorization is not required, a fluorescent material may be used for increased daytime visibility.

6B-2 Illumination and Reflectorization

All signs intended to be used during the hours of darkness shall be either reflectorized with a material that has a smooth, sealed outer surface, or illuminated to show approximately the same shape and color day and night. Where there is serious interference from extraneous light sources and a reflectorized installation is not likely to give effective performance, an illuminated sign should be used. Sign illumination may be either internal or external. When the full face of the sign is outlined by internal illumination, thereby indicating the shape of the

VI-11 (c)

Scan by Kittelson LLC

sign, background reflectorization is not required. Where external illumination is provided, the light source should be properly shielded to protect drivers from glare. Street or highway lighting is not regarded as meeting the requirements for sign illumination.

6B-3 Position of Signs

Signs shall be placed in positions where they will convey their messages most effectively and placement must therefore be accommodated to highway design and alignment. Signs shall be so placed that the driver will have adequate time for response.

As a general rule signs shall be located on the right-hand side of the street or roadway. Where special emphasis is deemed necessary, dual installations may be made which consist of duplicate signs opposite each other on the left and right sides of the roadway, respectively. Within a construction or maintenance zone, however, it is often necessary and/or desirable to erect signs on portable supports placed within the roadway itself. It is also permissible to mount appropriate signs on barricades.

Standards for height and lateral clearance of roadside signs are shown in figure 6-1. Signs mounted on barricades, or temporary supports, may be at lower heights but the bottom of the sign shall be not less than one foot above the pavement elevation. Higher mounting heights are, however, desirable.

Where open highway conditions prevail on the approach to the work site, advance warning signs should be placed approximately 1,500 feet in advance of the condition to which they are calling attention. Where a series of advance warning signs are used, the warning sign nearest the work site should be placed approximately 500 feet from the point of restriction with the additional signs at 500-1000 foot intervals. On expressway and limited access facilities, the advance warning distance should be increased to one-half mile or more. On city streets, where more restrictive conditions generally prevail on the approach to the work area, signs in the immediate vicinity of the work may be placed at closer spacings. Typical sequences and spacings of advance warning signs are shown in figures 6-2 to 6-10.

6B-4 Erection of Signs

Signs on fixed supports are usually mounted on a single post, although those wider than 36 inches or larger than 10 square feet in area should generally be mounted on two posts. Signs mounted on portable supports are suitable for temporary conditions. All such installations should be so constructed to yield upon impact to minimize hazards to motorists.

For maximum mobility on certain types of maintenance operations, a large sign may be effectively mounted on a vehicle stationed in advance of the work or moving along with it. This may be the working vehicle

Scan by Kittelson LLC

M4-9R
30″ × 24″

M4-10R
48″ × 18″

The Detour Arrow sign uses a horizontal arrow pointed to the right or left as required at each location.

Each detour shall be adequately marked with standard temporary route markers and destination signs as a responsibility of the highway agency. The Detour marker (M4-8) (sec. 2D-24) mounted at the top of a route marker assembly is to be used to mark a temporary route that branches from a regular numbered route, bypasses a section of a route which is closed or blocked by construction, major maintenance, roadway damage or traffic emergency and rejoins the regularly numbered route beyond that section. The Detour sign (M4-9) (sec. 2D-25) is to be used for unnumbered routes; for use in emergency situations; for periods of short durations; or where, over relatively short distances, it is not necessary to show route markers to guide traffic along the detour and back to its desired route. A Street Name sign may be placed above or incorporated in the Detour sign (M4-9) to indicate the name of the roadway for which the detour was established. VI-15 (c)

The End Detour sign (M4-8a or M4-8b) may be used to advise the motorist that the detour has ended. The End Detour sign may be used on either numbered highways or unnumbered roadways. If used on a numbered highway, it should be erected above a route marker located near the end of the detour. VI-16 (c)

6B-39 Pilot Car Sign (G20-4)

The Pilot Car sign shall be mounted in a conspicuous position on the rear of a vehicle used for guiding one-way traffic through or around a road construction or maintenance project (sec. 6F-9). It carries the legend PILOT CAR—FOLLOW ME. A flagger must be stationed on every approach to a project on which a pilot car is used, to hold traffic as necessary until the pilot car is available to lead.

G20-4
36″ × 18″

Scan by Kittelson LLC

Scan by Kittelson LLC

Table VI-2

Warning Lights

	Type A *Low Intensity*	Type B *High Intensity*	Type C *Steady Burn*
Lens Directional Faces	1 or 2	1	1 or 2
Flashing Rate per Minute	55 to 75	55 to 75	Constant
Flash Duration [1]	10%	8%	Constant
Minimum Effective Intensity [2]	4 Candelas	35 Candelas	
Minimum Beam Candle Power [2]			2 Candelas
Hours of Operation	Dusk to Dawn	24 hrs/day	Dusk to Dawn

[1] Length of time that instantaneous intensity is equal to or greater than effective intensity.

[2] These values must be maintained within a solid angle 9° on each side of the vertical axis, and 5° above and 5° below the horizontal axis.

Type A Low Intensity Flashing Warning lights are most commonly mounted on barricades, drums, vertical panels or advance warning signs and are intended to continually warn drivers that they are approaching or proceeding in a hazardous area.

Warning lights shall have a minimum mounting height of 36 inches to the bottom of the lens. Type B High Intensity Flashing Warning lights are normally mounted on the advance warning signs or on independent supports. Extremely hazardous site conditions within the construction area may require that the lights be mounted on Type I barricades, signs, or other supports. As these lights are effective in daylight as well as dark, they are designed to operate 24 hours per day.

Type C Steady Burn lights are intended to be used to delineate the edge of the traveled way on detour curves, on lane changes, on lane closures and on other similar conditions. Their application shall be as indicated in section 6E-4.

The light weight and portability of warning lights are advantages that make these devices useful as supplements to the reflectorization on hazard warning devices. The flashing lights are effective in attracting a driver's attention and, therefore, provide an excellent means of identifying the hazard. Flashers shall not be used for delineation, as a series of flashers would tend to obscure the desired vehicle path.

Warning lights on barricades shall be installed to a minimum mounting height of 36 inches to the bottom of the lens.

6E-6 Special Lighting Units

Special lighting units, generally trailer-mounted for easy transport to a job site, have been developed to supplement conventional signs, pavement markings and lighting for maintenance activities. The flashing lights on the unit are operated from a self-contained power source mounted on the trailer, either batteries or an electric generator. A variety of light configurations are used for traffic warning and guidance.

Scan by Kittelson LLC

Most units are designed with racks, channels or other devices so that signs may be displayed with messages appropriate to the particular kind of work being performed.

These special lighting units are used most frequently on high density urban freeways and are placed just in advance of the work site. The flashing lights, together with appropriate signs, have proven to be very effective warning devices while also providing some physical protection to the maintenance workers.

Although these special lighting units were developed to satisfy a need on urban freeways, they have many applications on all types of highways. Their mobility, together with the availability of flashing lights and/or a variety of sign messages makes them useful for almost any situation where conditions require extraordinary advance warning of the maintenance activities. If the units are to be used at night, consideration should be given to providing a means whereby the intensity of the flashers may be reduced during darkness when the lower intensities are desirable.

6E-7 Advance Warning Arrow Panel

Advance warning arrow panels are sign panels with a matrix of lights capable of either flashing or sequential displays. Advance Warning Arrow panels are intended to supplement other traffic control devices. Arrow panels will not solve difficult traffic problems by themselves, but they can be very effective when properly used to reinforce signs, barricades, cones, and other traffic control devices. Necessary signs, barricades, or other traffic control devices shall be used in conjunction with the advance warning arrow panel.

Arrow panels are effective in encouraging drivers to leave the closed lane sooner. Arrow panels provide additional advance warning and directional information where traffic must be shifted laterally along the roadway. They assist in diverting and controlling traffic around construction or maintenance activities being conducted on or adjacent to the travelled way and give drivers positive guidance about a roadway path diversion that they might not otherwise expect. VI-13 (c)

Arrow panels are generally used for day or night lane closures, roadway diversions, and slow-moving maintenance and construction activities on the travelled way. They are particulary effective under high-speed and high-density traffic conditions. At night, they are effective where other traffic control devices cannot provide adequate advance warning of a roadway path diversion. During daylight, arrow panels are effective under high-density traffic conditions that might block the driver's advanced view of construction or maintenance activities ahead.

6E-8 Advance Warning Arrow Panel Application

Placement of arrow panel should be varied as needed to achieve the desired recognition distances. Also, care must be taken in the placement to avoid driver confusion in the vicinity of ramps, median crossovers, and side road intersections.

Scan by Kittelson LLC

For stationary lane closures, the arrow panel should be placed on the shoulder at the beginning of the taper, or where there are narrow shoulders, in the closed lane behind the channelizing devices on the same side of the lane closure. Placement at the start of the taper is preferred to placement in the middle of the taper.

In diversions where arrow panel need has been determined, the arrow panel should be placed behind the barricades closing the roadway.

For moving-maintenance activities where a lane is closed, it is preferable that the arrow panel be placed at the rear of the activity in the closed lane on a vehicle separate from the maintenance vehicle itself. The arrow panel should always remain upstream of the maintenance vehicle where adequate recognition distance is available. The vehicle carrying the arrow panel should also be equipped with appropriate signing and/or lighting.

Generally arrow panels should not be used for shoulder or roadside work activities nor should they be used on two lane highways because the panels can cause unnecessary lane changing.

6E-9 Advance Warning Arrow Panel Specifications

VI-13 (c)

Advance warning arrow panel shall meet the specifications of Table VI-3. The minimum legibility distance for various traffic conditions are based on the decision-sight distance concept. Minimum legibility distances are those at which the arrow panel message can be comprehended by a driver on a sunny day or clear night. Also shown are the arrow panel sizes needed to meet the legibility distance needs.

Table VI-3

Advance Warning Arrow Panels

Type	*Minimum Size*	*Minimum Number of Panel Lamps*	*Minimum Legibility Distance*
A	24″ × 48″	12	½ mile
B	30″ × 60″	13	¾ mile
C	48″ × 96″	15	1 mile

Type A advance warning arrow panels are appropriate for use on low speed urban streets. Type B are appropriate for intermediate speed facilities and for maintenance on moving operations on high-speed roadways. Type C arrow panels are intended to be used on high-speed, high-volume construction projects.

Arrow panels shall be rectangular, of solid construction, and finished with nonreflective flat black. The panels shall be mounted on vehicle, trailer, or other suitable support. Vehicle-mounted panels should be provided with remote controls. Minimum mounting height should be 7 feet above roadway to the bottom of the panel, except on vehicle mounted panels which should be as high as practicable.

Scan by Kittelson LLC

Arrow panels should have the capability of the following mode selections: (1) left or right flashing or sequential arrows; or (2) left or right sequential chevrons; and (3) double flashing arrows; and (4) caution. The caution mode consists of four or more lamps, arranged in a pattern which will not indicate a direction.

Arrow panels shall be capable of a minimum of 50 percent dimming from their rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashers per minute. VI-13 (c)

Minimum lamp "on time" shall be 50 percent for the flashing arrow and 25 percent for the sequential chevron.

The arrow panel lamps or lenses shall be recess mounted or, alternately equipped with an upper hood of not less than 180°, and the color of the light emitted shall be yellow.

Scan by Kittelson LLC

8B-3 Railroad Advance Warning Signs (W10-1, 2, 3, 4)

A Railroad Advance Warning (W10-1) sign shall be used on each roadway in advance of every grade crossing except:

1. On low-volume, low-speed roadways crossing minor spurs or other tracks that are infrequently used and which are flagged by train crews.

2. In the business districts of urban areas where active grade crossing traffic control devices are in use.

3. Where physical conditions do not permit even a partially effective display of the sign.

Placement of the sign shall generally be in accordance with Section 2C-3 and Sections 2A-21 to 2A-27, normally 750 feet or more in advance of the crossing in rural areas and 250 feet in advance of the crossing in urban areas, except that in a residential or business district where low speeds are prevalent, the signs may be placed a minimum distance of 100 feet from the crossing. On divided highways and one-way roads, it is desirable to erect an additional sign on the left side of the roadway. VIII-2 (c)

The W10-2, 3, and 4 signs may be installed on highways that are parallel to railroads. The purpose of these signs is to warn a motorist making a turn that a railroad crossing is ahead. Where there is 100 feet or more between the railroad and the parallel highway, a W10-1 sign should be installed in advance of the railroad crossing and the W10-2, 3, or 4 signs on the parallel highway would not be necessary.

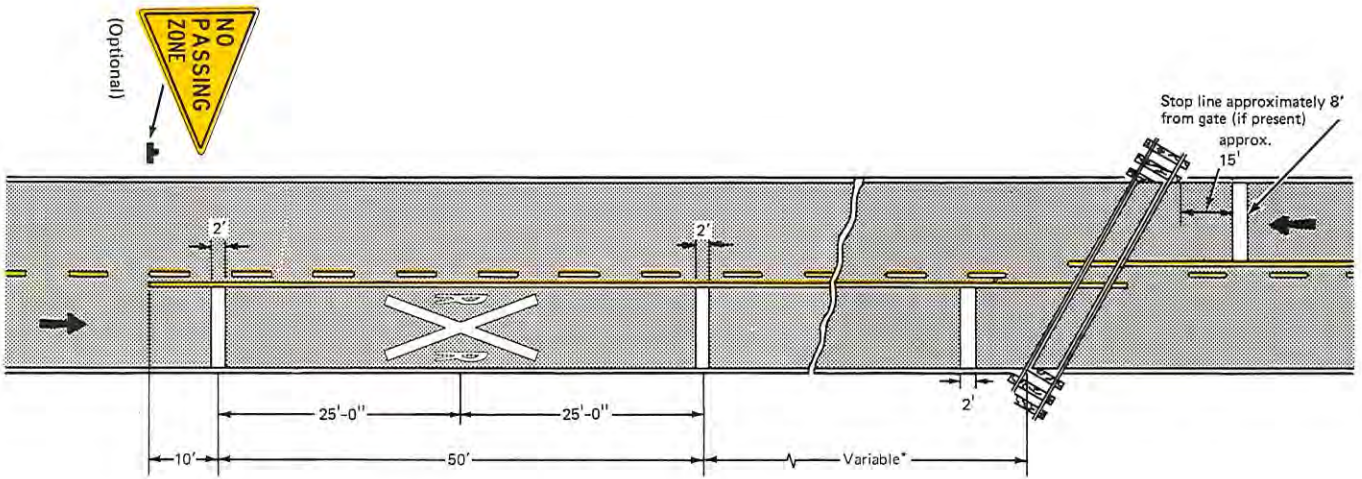
W10-1
36″ Diameter

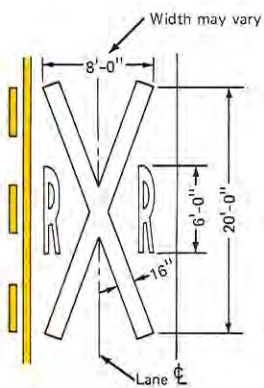
W10-2
30″ × 30″

W10-3
30″ × 30″

W10-4
30″ × 30″

VIII-2 (c)





*The distance from the railroad crossing marking to the nearest track will vary according to the approach speed and the sight distance of the vehicular traffic approaching, but probably should be not less than 50 feet.

A three-lane roadway should be marked with a centerline for two-lane approach operation on the approach to a crossing.

On multi-lane roads the transverse bands should extend across all approach lanes, and individual RXR symbols should be used in each approach lane.

Refer to Standard Alphabet for Highway Signs and Markings for RXR symbols details.

Figure 8-2. Typical pavement markings at railroad-highway grade crossings.

Scan by Kittelson LLC

Scan by Kittelson LLC

8B-4 Pavement Markings

Pavement markings in advance of a grade crossing shall consist of an X, the letters RR, a no passing marking (2-lane roads), and certain transverse lines. Identical markings shall be placed in each approach lane on all paved approaches to grade crossings where grade crossing signals or automatic gates are located, and at all other grade crossings where the prevailing speed of highway traffic is 40 mph or greater.

The markings shall also be placed at crossings where the engineering studies indicate there is a significant potential conflict between vehicles and trains. At minor crossings or in urban areas, these markings may be omitted if engineering study indicates that other devices installed provide suitable control.

The design of railroad crossing pavement markings shall be essentially as illustrated in figure 8-2. The symbols and letters are elongated to allow for the low angle at which they are viewed. All markings shall be reflectorized white except for the no-passing markings which shall be reflectorized yellow.

8B-5 Illumination at Grade Crossings

At grade crossings where a substantial amount of railroad operation is conducted at night, particularly where train speeds are low, where crossings are blocked for long periods, or accident history indicates that motorists experience difficulty in seeing trains or control devices during the hours of darkness, illumination at and adjacent to the crossing may be installed to supplement other traffic control devices where an engineering analysis determines that better visibility of the train is needed. Regardless of the presence of other control devices, illumination will aid the motorist in observing the presence of railroad cars on a crossing where the gradient of the vehicular approaches is such that the headlights of an oncoming vehicle shine under or over the cars.

Recommended types and location of luminaires for grade crossing illumination are contained in the American National Standard Practice for Roadway Lighting, RP8.* In any event, luminaires shall be so located and light therefrom so directed as to not interfere with aspects of the railroad signal system and not interfere with the field of view of members of the locomotive crew.

8B-6 Exempt Crossing Signs (R15-3, W10-1a)

When authorized by law or regulation a supplemental sign (R15-3) bearing the word EXEMPT may be used below the Crossbuck and Track signs at the crossing, and supplemental sign (W10-1a) may be used below the Railroad Advance Warning sign. These supplemental signs are to in-

* Available from the Illuminating Engineering Society, New York, N.Y. 10017.

Scan by Kittelson LLC

form drivers of vehicles carrying passengers for hire, school buses carrying children, or vehicles carrying flammable or hazardous materials that a stop is not required at certain designated grade crossings, except when a train, locomotive, or other railroad equipment is approaching or occupying the crossing or the driver's view of the sign is blocked.

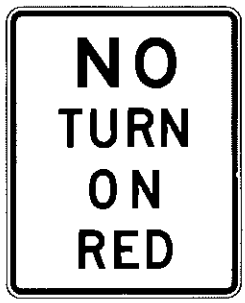
R15-3 White background
W10-1a Yellow background

8B-7 Turn Restrictions

At a signalized highway intersection within 200 feet of a grade crossing, where the intersection traffic control signals are preempted by the approach of a train, all existing turning movements toward the grade crossing should be prohibited by proper placement of a NO RIGHT TURN sign (R3-1a) or a NO LEFT TURN sign (R3-2a) or both. In each case, these signs shall be visible only when the restriction is to be effective. A blank-out, internally illuminated, or other similar type sign may be used to accomplish this objective. The signs shall be black on white and have a standard size of 24″ × 30″.

8B-8 Do Not Stop on Tracks Sign (R8-8)

Whenever an engineering study determines that the potential for vehicles stopping on the tracks is high, a DO NOT STOP ON TRACKS sign should be used. The sign should normally be placed on the far right side of the grade crossing. On multilane roads and one-way roadways a second sign should be placed on the far left side of the grade crossing.



R10-11
24″ × 30″

R8-8
24″ × 30″

Scan by Kittelson LLC

8B-9 STOP Signs at Grade Crossings (R1-1, W3-1)

The use of the STOP signs at railroad-highway grade crossings shall be limited to those grade crossings selected after need is established by a detailed traffic engineering study. Such crossings should have the following characteristics:

1. Highway should be secondary in character with low traffic counts.
2. Train traffic should be substantial.
3. Line of sight to an approaching train is restricted by physical features such that approaching traffic is required to reduce speed to 10 miles per hour or less in order to stop safely.
4. At the stop bar, there must be sufficient sight distance down the track to afford ample time for a vehicle to cross the track before the arrival of the train. VIII-5 (c)

The engineering study may determine other compelling reasons for the need to install a STOP sign, however, this should only be an interim measure until active traffic control signals can be installed. STOP signs shall not be used on primary through highways or at grade crossings with active traffic control devices.

Whenever a STOP sign is installed at a grade crossing, a Stop Ahead sign shall be installed in advance of the STOP sign.

Scan by Kittelson LLC

Scan by Kittelson LLC

9B-22 Supplemental Plaques for Route Signs and Route Markers

Where desired, supplemental plaques can be used with the D11-1 and M1-8 signs to furnish additional information, such as directional changes in the route, and intermediate range distance and destination information. The M4-11 through M4-13 signs may be mounted above the appropriate Route Signs or Route Marker. Supplemental plaques D1-1b and c are intended for use with the D11-1 Bicycle Route Sign. The appropriate arrow sign (M7-1 through M7-7), if used, should be placed below the Route Sign or Route Marker. These signs shall have a white arrow on a green background.

M4-11
24″ × 6″ or 12″ × 4″

D1-1b(L)
24″ × 6″

M4-12
24″ × 6″ or 12″ × 4″

D1-1b(R)
24″ × 6″

M4-13
24″ × 6″ or 12″ × 4″

D1-1(c)
24″ × 6″

M7-1

M7-2

M7-3

M7-4

M7-5

M7-6

M7-7

M7-1 through M7-7
12″ × 9″

Scan by Kittelson LLC

9B-23 Bicycle Parking Area Sign (D4-3)

The Bicycle Parking Area sign may be used where it is desired to show the direction to a designated bicycle parking area within a parking facility or at other locations. The sign shall be a vertical rectangle of a standard size of 12 by 18 inches. It shall carry a standard bicycle symbol, the word PARKING, and an arrow. The legend and border shall be green on a reflectorized white background.

IX-2 (c)

D4-3
12″×18″

Scan by Kittelson LLC

Scan by Kittelson LLC

HTO-21/3-84(15M)P
HTO-21/R9-87(1M)QE